HP ProLiant ML370 Generation 5 Server Maintenance and Service Guide

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Audience assumptions

This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Customer self repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (http://www.hp.com/go/selfrepair).

Parts only warranty service

Your HP Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, HP will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

- **Obligatoire** - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.
- **Facultatif** - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (http://www.hp.com/go/selfrepair).

Service de garantie "pièces seules"

Votre garantie limitée HP peut inclure un service de garantie "pièces seules". Dans ce cas, les pièces de rechange fournies par HP ne sont pas facturées.

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedirà direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

- **Obbligatorie** – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.
- **Opzionali** – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (http://www.hp.com/go/selfrepair).

Servizio di garanzia per i soli componenti

La garanzia limitata HP può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, HP fornirà gratuitamente le parti di ricambio.

Per il servizio di garanzia per i soli componenti è obbligatoria la formula CSR che prevede la riparazione da parte del cliente. Se il cliente invece richiede la sostituzione ad HP, dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

- **Zwingend –** Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.
- **Optional –** Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung

stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (http://www.hp.com/go/selfrepair).

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

Ihre HP Garantie umfasst möglicherweise einen Parts-only Warranty Service (Garantieservice ausschließlich für Teile). Gemäß den Bestimmungen des Parts-only Warranty Service stellt HP Ersatzteile kostenlos zur Verfügung.

Für den Parts-only Warranty Service ist das CSR-Verfahren zwingend vorgegeben. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (http://www.hp.com/go/selfrepair).

Servicio de garantía exclusivo de componentes

La garantía limitada de HP puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, HP le facilitará los componentes de repuesto sin cargo adicional alguno.

Para este servicio de garantía exclusivo de componentes, es obligatoria la sustitución de componentes por parte del usuario (CSR). Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

- **Verplicht:** Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.
- **Optioneel:** Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (http://www.hp.nl/services/servicepartners).

Garantieservice "Parts Only"

Het is mogelijk dat de HP garantie alleen de garantieservice "Parts Only" omvat. Volgens de bepalingen van de Parts Only garantieservice zal HP kosteloos vervangende onderdelen ter beschikking stellen.

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

- **Obrigatória** – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
- **Opcional** – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (http://www.hp.com/go/selfrepair).

Serviço de garantia apenas para peças

A garantia limitada da HP pode incluir um serviço de garantia apenas para peças. Segundo os termos do serviço de garantia apenas para peças, a HP fornece as peças de reposição sem cobrar nenhuma taxa.

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

顧客自己修理保証サービス

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数の顧客自己修理（CSR）部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口に電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。顧客自己修理の際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

部品のみ保証サービス

HP保証サービスには、部品のみ保証サービスが適用される場合があります。このサービスでは、交換部品は無償で提供されます。

部品のみ保証サービスにおいては、CSR部品をお客様により交換作業していただくことが必須となります。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費はお客様の負担となります。

客户自行维修

HP 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 HP（或 HP 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，HP 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，HP 可能会要求您支付更换费用。客户自行维修时，HP 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (http://www.hp.com/go/selfrepair)。

仅部件保修服务

您的 HP 有限保修服务可能涉及仅部件保修服务。根据仅部件保修服务条款的规定，HP 将免费提供更换的部件。

仅部件保修服务要求进行 CSR 部件更换。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP（或 HP 服務供應商或維修夥伴）辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (http://www.hp.com/go/selfrepair)。

僅限零件的保固服務

您的「HP 有限保固」可能包含僅限零件的保固服務。在僅限零件的保固服務情況下，HP 將免費提供替換零件。

針對僅限零件的保固服務，CSR 零件替換是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(http://www.hp.com/go/selfrepair)를 참조하십시오.

부품 제공 보증 서비스

HP 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 HP는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

Illustrated parts catalog

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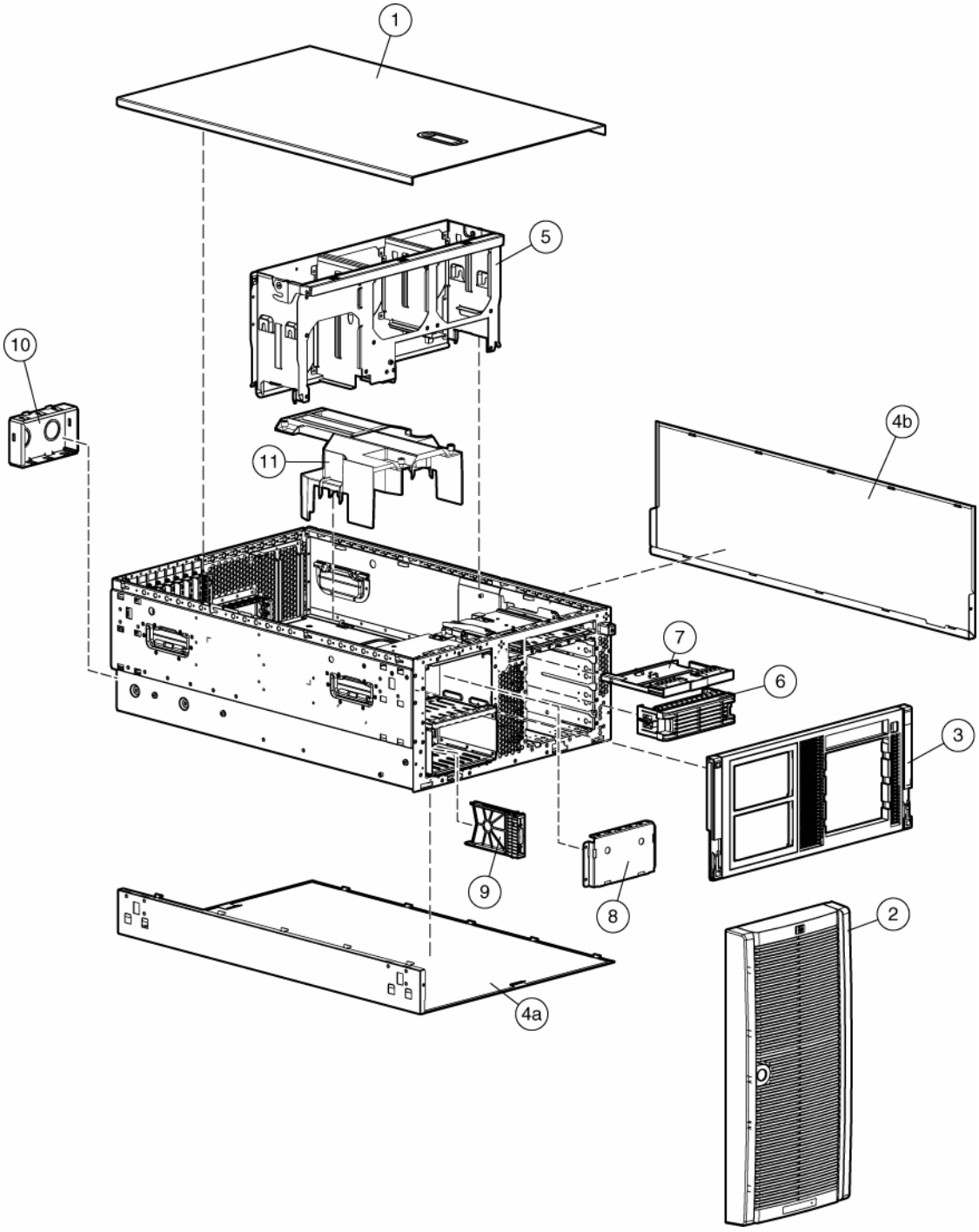
Mechanical components



Item	Description	Assembly part number	Spare part number	Customer self repair (on page 5)
1	Access panel (top cover)	389059-001	409410-001	Mandatory[1]
2	Front bezel (tower model only)	389070-001	409411-001	Optional[2]
3	Rack bezel (rack model only)	389064-001	409412-001	Optional[2]
4	Tower configuration panels	—	409413-001	—

Item	Description	Assembly part number	Spare part number	Customer self repair (on page 5)
	a) Wrap-around panel	389077-001	—	Mandatory[1]
	b) Top cover	389078-001	—	Mandatory[1]
5	Center wall	384886-001	409433-001	Optional[2]
6	Removable media blank	394777-001	409414-001	Mandatory[1]
7	Media bay spacer	389079-001	409415-001	Mandatory[1]
8	SAS drive cage blank	393850-001	409416-001	Mandatory[1]
9	Hard drive blank	376383-001	392613-001	Mandatory[1]
10	Power supply blank	394436-001	409417-001	Mandatory[1]
11	Processor air baffle	411741-001	409419-001	Optional[2]
12	Torx tool, T-15/T-10 L-head*	377511-001	413965-001	Mandatory[1]
13	Systems Insight Display tray with eject button*	403568-001	409420-001	Optional[2]

*Not shown
[1]Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
[2]Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.
[3]No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

[1]Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.
[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.
[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

[1]Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.
[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.
[3]No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un “No” nel Catalogo illustrato dei componenti.

[1]Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.
[2]Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.
[3]No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

[1]Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.
[3]No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra “No” en el catálogo ilustrado de componentes.

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

[1]Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
[2]Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.
[3]No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca “No” (Não), no catálogo de peças ilustrado.

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

[1]Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

[2]Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

[3]No: 否 — 某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

[1]Mandatory: 強制的 — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

[2]Optional: 選購的 — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

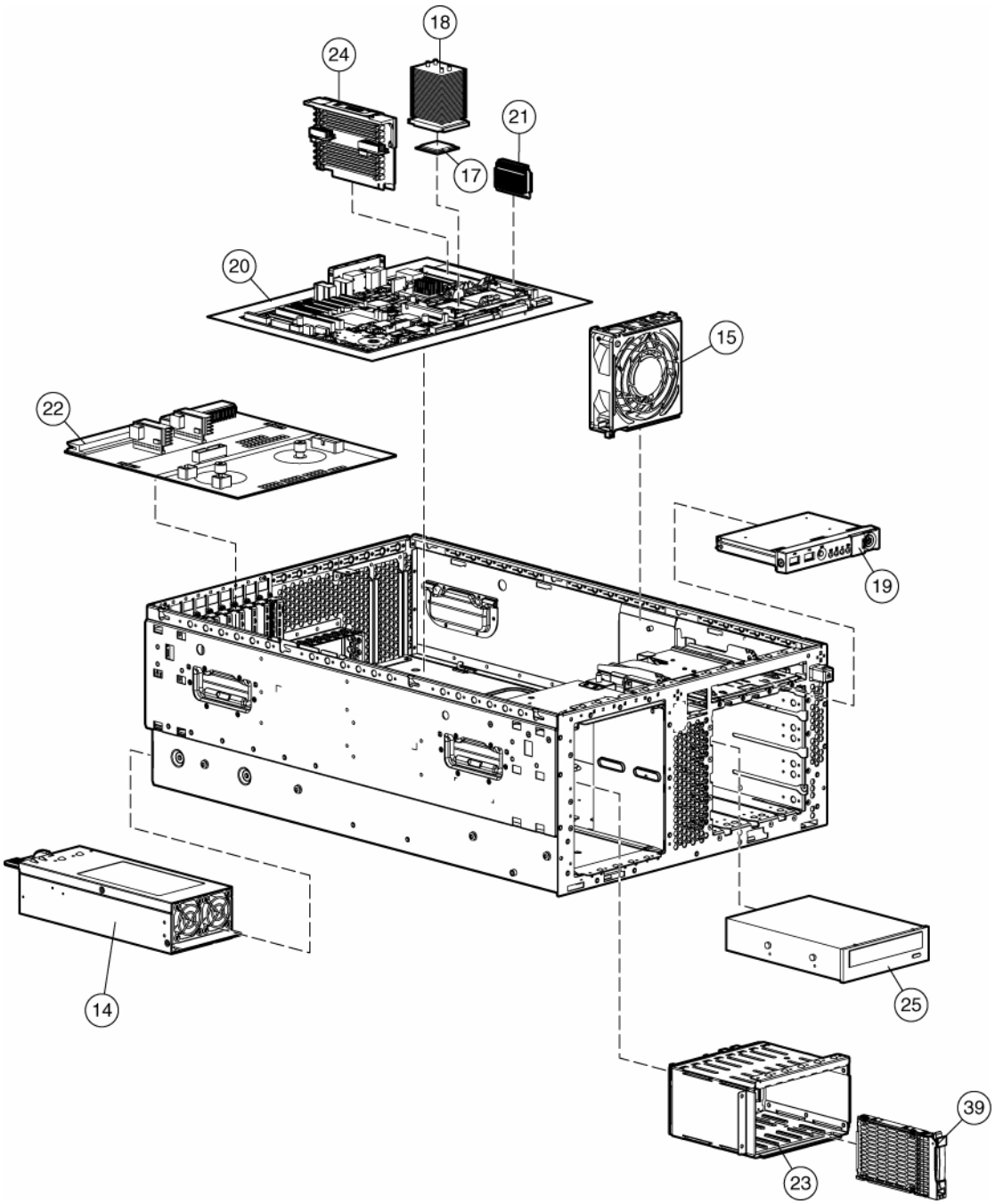
[3]No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

[1] Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

[2] Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

[3] No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

System components



Item	Description	Assembly part number	Spare part number	Customer self repair (on page 5)
	System components			
14	Hot-plug power supply, 1000 W	380622-001	403781-001	Optional[2]
15	Hot-plug fan, 120 mm	384881-001	409421-001	Optional[2]
16	3.3-V lithium battery*	166899-001	153099-001	Optional[2]
17	Processor	—	—	—

Item	Description	Assembly part number	Spare part number	Customer self repair (on page 5)
	a) Dual-core, Intel® Xeon™ Processor 5050 (3.00-GHz, 667-MHz FSB, 2x2-MB L2 cache)†	405176-004	409423-001	Optional[2]
	b) Dual-Core, Intel® Xeon™ Processor 5060 (3.20-GHz, 1066-MHz FSB, 2x2-MB L2 cache)*†	398571-002	409424-001	Optional[2]
	c) Dual-Core, Intel® Xeon™ Processor 5080 (3.73-GHz, 1066-MHz FSB, 2x2-MB L2 cache)*†	398571-001	412955-001	Optional[2]
	d) Dual-Core, Intel® Xeon™ Processor 5110 (1.60-GHz, 1066-MHz FSB, 2x2-MB L2 cache)*†	409408-002	416795-001	Optional[2]
	e) Dual-Core, Intel® Xeon™ Processor 5120 (1.86-GHz, 1066-MHz FSB, 2x2-MB L2 cache)*†	409408-001	416794-001	Optional[2]
	f) Dual-Core, Intel® Xeon™ Processor 5130 (2.0-GHz, 1333-MHz FSB, 2x2-MB L2 cache)*†	416162-001	416796-001	Optional[2]
	g) Dual-Core Intel® Xeon™ Processor 5140 (2.33-GHz, 1333-MHz FSB, 2x2-MB L2 cache)*†	416162-002	416797-001	Optional[2]
	h) Dual-Core, Intel® Xeon™ Processor 5150 (2.66-GHz, 1333-MHz FSB, 2x2-MB L2 cache)*†	416162-003	416798-001	Optional[2]
	i) Dual-Core, Intel® Xeon™ Processor 5160 (3.0-GHz, 1333-MHz FSB, 2x2-MB L2 cache)*†	416162-004	416799-001	Optional[2]
18	Processor heatsink, grease, alcohol pad	399041-001	409426-001	Optional[2]
	Boards			
19	Systems Insight Display panel with board, label, and bezel	012692-001	409427-001	Optional[2]
20	System board with processor cage	403611-001	409428-001	Optional[2]
21	PPM	399854-001	407748-001	Optional[2]
22	Power supply backplane	379125-001	399787-001	Optional[2]
23	SAS backplane duplex board with drive cage	389056-001	409429-001	Optional[2]
24	Memory board	012683-001	409430-001	Optional[2]
	Mass storage devices			
25	CD-ROM drive, IDE, 48x	266072-004	413383-001	Optional[2]
26	DVD-ROM drive*	290992-MD3	399312-001	Optional[2]
27	Diskette drive*	233327-002	399397-001	Optional[2]
	Miscellaneous			
28	Plastics kit	—	409431-001	—
	a) Foot, carbonite*	228148-003	—	Optional[2]

Item	Description	Assembly part number	Spare part number	Customer self repair (on page 5)
	b) Receptacle, door snap, stone*	148525-004	—	Optional[2]
	c) PCI retainer, card guide*	250967-004	—	Optional[2]
	d) Clip, cable, adhesive, 1.77-in*	241347-007	—	Optional[2]
	e) Clip, retainer, 0.125-in diameter*	379046-002	—	Optional[2]
	f) Clip, Torx tool retainer*	373134-001	—	Optional[2]
29	Hardware kit	—	409432-001	—
	a) Expansion slot cover*	228072-002	—	Optional[2]
	b) Systems Insight Display tray screws*	192308-009	—	Optional[2]
	c) Standoff, bumper*	252623-001	—	Optional[2]
	d) Screws, SAS cage blank*	192308-002	—	Optional[2]
30	Rack-mounting kit*	374503-001	377839-001	Optional[2]
31	Return kit, tower/rack packing box and cushions*	—	409434-001	Mandatory[1]
	Cables			
32	Miscellaneous cable kit	—	409436-001	Optional[2]
	a) CD-ROM drive data cable*	108950-041	—	—
	b) Systems Insight Display cable*	380393-001	—	—
	c) Fan cage cable*	395575-001	—	—
	d) Video cable*	392250-001	—	—
33	SAS option cable*	361316-006	389952-001	Optional[2]
34	Battery cable assembly, 11.5-inch, HP Smart Array P400 Controller*	408658-001	409124-001	Optional[2]
35	Battery cable assembly, 24-inch, HP Smart Array P400 Controller*	408658-002	409125-001	Optional[2]
36	Diskette drive cable*	271946-008	431243-001	Optional[2]
37	Second parallel/serial port cable*	384445-002	418300-001	Optional[2]
	Memory			
38	FBDIMMs, registered DDR2	—	—	—
	a) 1-GB, 2x512-MB*	398705-051	416470-001	Optional[2]
	b) 2-GB, 2x1-GB*	398706-051	416471-001	Optional[2]
	c) 4-GB, 2x2-GB*	398707-051	416472-001	Optional[2]
	d) 8-GB, 2x4-GB*	398708-061	416473-001	Optional[2]
	Options			
39	SFF hard drive	—	—	—
	a) 36-GB SAS, 10,000-rpm	375859-B21	376596-001	Optional[2]
	b) 72-GB SAS, 10,000-rpm*	375861-B21	376597-001	Optional[2]

Item	Description	Assembly part number	Spare part number	Customer self repair (on page 5)
	c) 60-GB SATA, 5,000-rpm*	379306-B21	382264-001	Optional[2]
40	Keyboard*	382641-001	382925-001	Mandatory[1]
41	Mouse*	334684-003	390937-001	Mandatory[1]
42	AC power cord*	163719-002	187335-001	Mandatory[1]
43	x4/x8 PCI bus expander*	012772-001	411009-001	Optional[2]
44	HP Smart Array E200 Controller*	012891-001	412799-001	Optional[2]
45	HP Smart Array E200 Controller cache module, 64-MB without battery*	012970-001	412800-001	Optional[2]
46	HP Smart Array E200 Controller cache module, 128-MB, with battery*	409248-001	413486-001	Optional[2]
47	Battery, BBWC, NiMH, 3.6-V*	381573-001	398648-001	Optional[2]
48	HP Smart Array P400 Controller*	012760-002	405832-001	Optional[2]
49	HP Smart Array P400 Controller cache module, 256-MB*	012764-004	405836-001	Optional[2]
50	HP Smart Array P400 Controller cache module, 512-MB*	012764-003	405835-001	Optional[2]

* Not shown

†Do not mix single-core and dual-core processors, or processors with different cache sizes or speeds.

‡**REQUIREMENT:**

For Customers in the EU only.

The use of the Original Spare part is regulated by RoHS legislation§.

If your unit contains a part that is labelled with the Modified Spare number, the Modified Spare must be ordered as the replacement part in the EU.

If your unit contains a part that is labelled with the Original Spare number, please order the Original Spare as the replacement part in the EU. In this case either the Original Spare or the Modified Spare may be shipped which will not affect performance or functionality of the unit.

§*Directive 2002/95/EC restricts the use of lead, mercury, cadmium, hexavalent chromium, PBBs and PBDEs in electronic products.*

[1]Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

[2]Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

[3]No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

[1]Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

[1]Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.
[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.
[3]No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

[1]Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.
[2]Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.
[3]No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No" bzw. „Nein" gekennzeichnet.

[1]Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.
[3]No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

[1]Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
[2]Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.
[3]No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

[1]Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

[2]Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

[3]No: 否 — 某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

[1]Mandatory: 強制的 — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

[2]Optional: 選購的 — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

[3]No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

[1] Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

[2] Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

[3] No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

Removal and replacement procedures

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Required tools

You need the following items for some procedures:

- T-10/T-15 Torx screwdriver (included with the server)
- Diagnostics Utility (included on the SmartStart CD-ROM)

Safety considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Symbols on equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

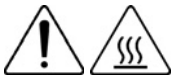
WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

25-41 kg

55-90 lbs

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Rack warnings

⚠ **WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:**

- **The leveling jacks are extended to the floor.**
- **The full weight of the rack rests on the leveling jacks.**
- **The stabilizing feet are attached to the rack if it is a single-rack installation.**
- **The racks are coupled together in multiple-rack installations.**
- **Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.**

⚠ **WARNING: To reduce the risk of personal injury or equipment damage when unloading a rack:**

- **At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.**
- **Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.**

⚠ **WARNING: To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.**

⚠ **WARNING: When installing a server in a telco rack, be sure that the rack frame is adequately secured to the top and bottom of the building structure.**

Preparation procedures

To access some components and perform certain service procedures, you must perform one or more of the following procedures:

- Extend the server from the rack (on page 29).

  If you are performing service procedures in an HP, Compaq branded, telco, or third-party rack cabinet, you can use the locking feature of the rack rails to support the server and gain access to internal components.

  For more information about telco rack solutions, refer to the RackSolutions.com website (http://www.racksolutions.com/hp).
- Power down the server (on page 29).

  If you must remove a server from a rack or a non-hot-plug component from a server, power down the server.
- Remove the server from the rack (on page 29).

  If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack.

Power down the server

WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

IMPORTANT: If installing a hot-plug device, it is not necessary to power down the server.

1. Shut down the OS as directed by the OS documentation.
2. Press the Power On/Standby button to place the server in standby mode. When the server enters standby power mode, the system power LED changes to amber.
3. Disconnect the power cords.

The system is now without power.

Extend the server from the rack

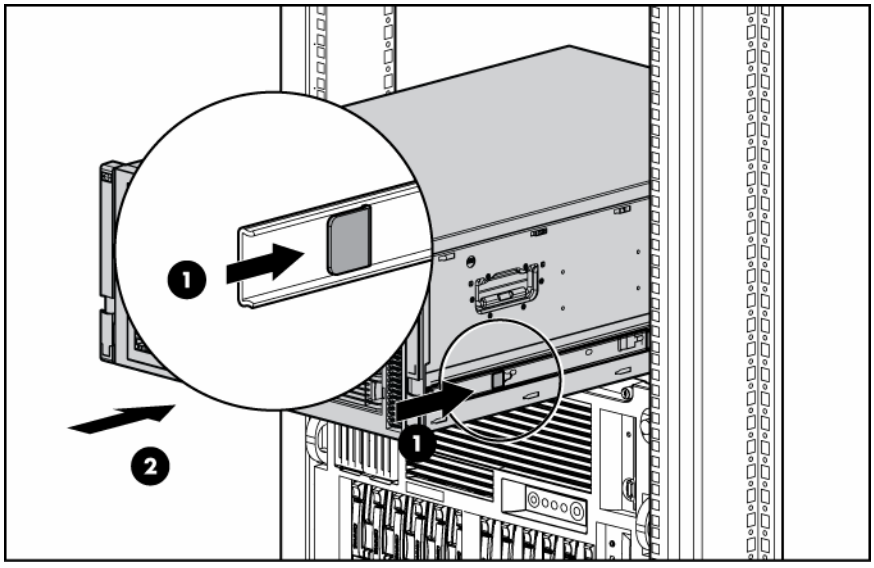
IMPORTANT: If the server is installed in a telco rack, remove the server from the rack to access internal components.

1. Extend the server on the rack rails until the server rail-release latches engage.

WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

2. After performing the installation or maintenance procedure, slide the server into the rack by pressing the server rail-release latches.

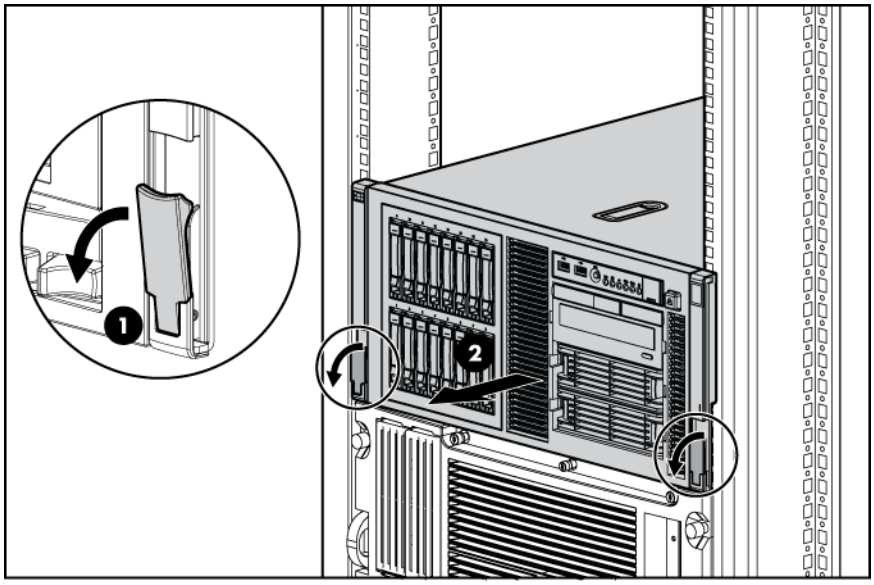


Remove the server from the rack

To remove the server from an HP, telco, or third-party rack:

1. Power down the server (on page 29).
2. Disconnect the cabling.

3. Extend the server from the rack. Reverse the server installation steps in the documentation that ships with the rack-mounting option.



4. Press the server rail-release latches and remove the server from the rack.
5. Place the server on a sturdy, level surface.

Front bezel

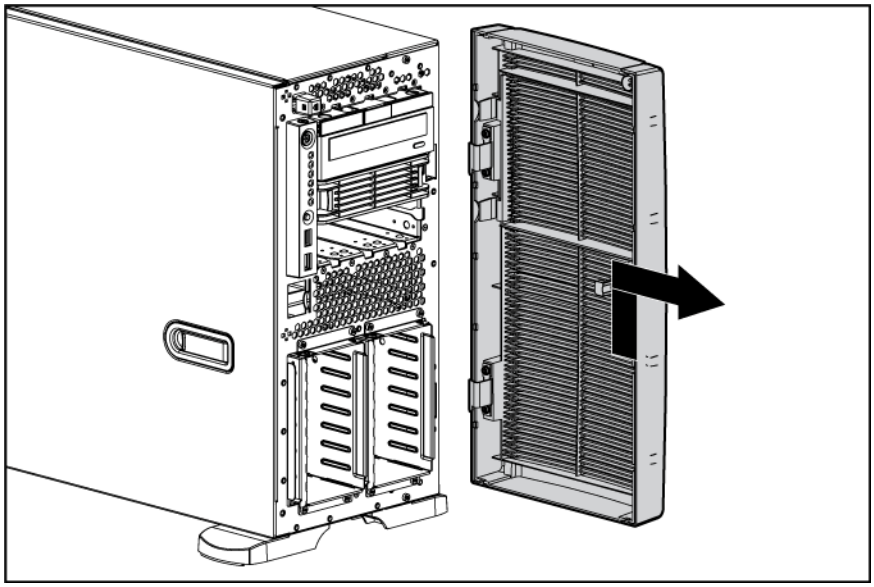
Tower servers have a removable front bezel that must be unlocked and opened before accessing the hard drive cage, and before removing the access panel.

To remove the component:

1. Open the front bezel (tower servers only).

IMPORTANT: You must unlock the front bezel before removing the access panel.

2. Lift up the front bezel and remove it from the chassis.



To replace the component, reverse the removal procedure.

Access panel

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

To remove the component:

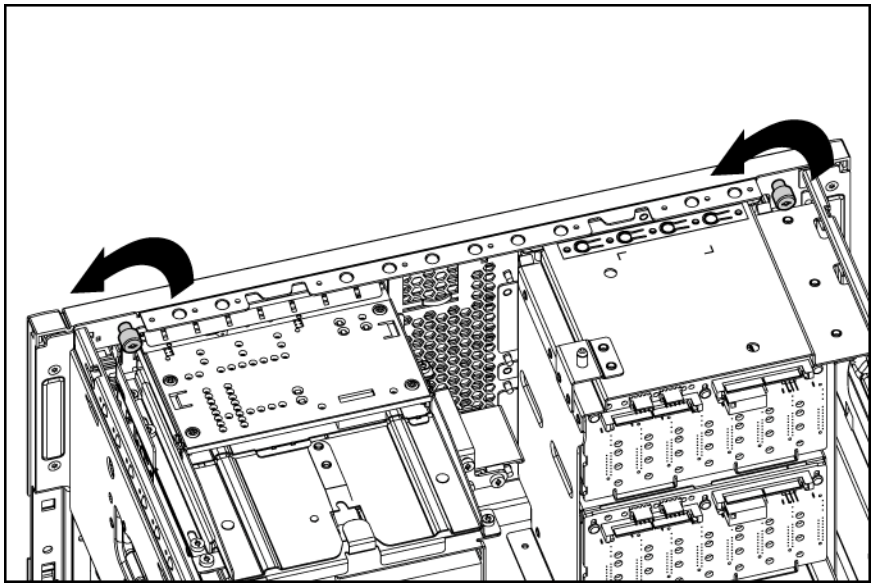
1. Power down the server (on page 29).
2. Extend or remove the server from the rack ("Extend the server from the rack" on page 29, "Remove the server from the rack" on page 29).
3. Open the front bezel ("Front bezel" on page 30).
4. Using a T-10/T-15 Torx screwdriver, unlock the access panel locking latch.
5. Lift up on the hood latch handle and remove the access panel.

To replace the component, reverse the removal procedure.

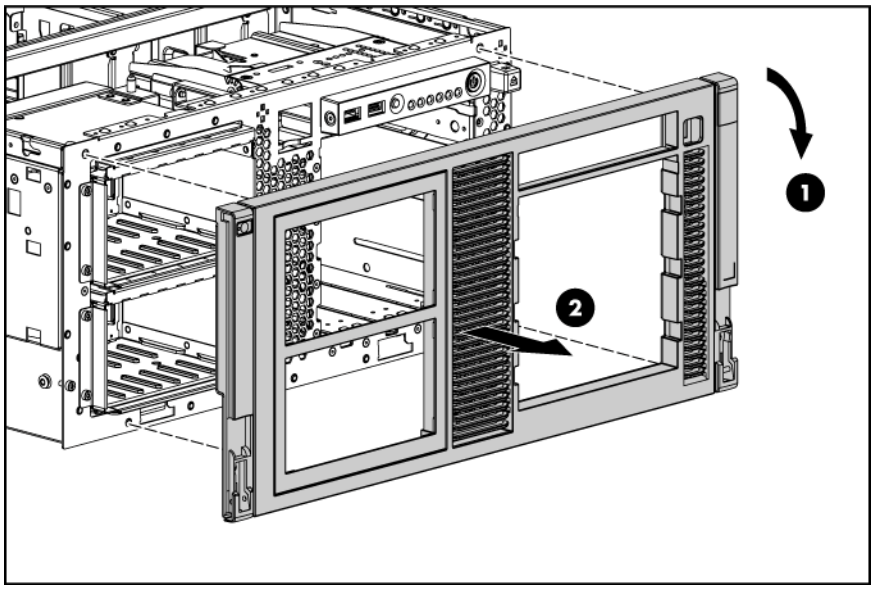
Rack bezel

To remove the component:

1. Extend or remove the server from the rack ("Extend the server from the rack" on page 29, "Remove the server from the rack" on page 29).
2. Remove the access panel ("Access panel" on page 31).
3. Loosen the two thumbscrews that secure the rack bezel to the chassis.



4. Remove the rack bezel.



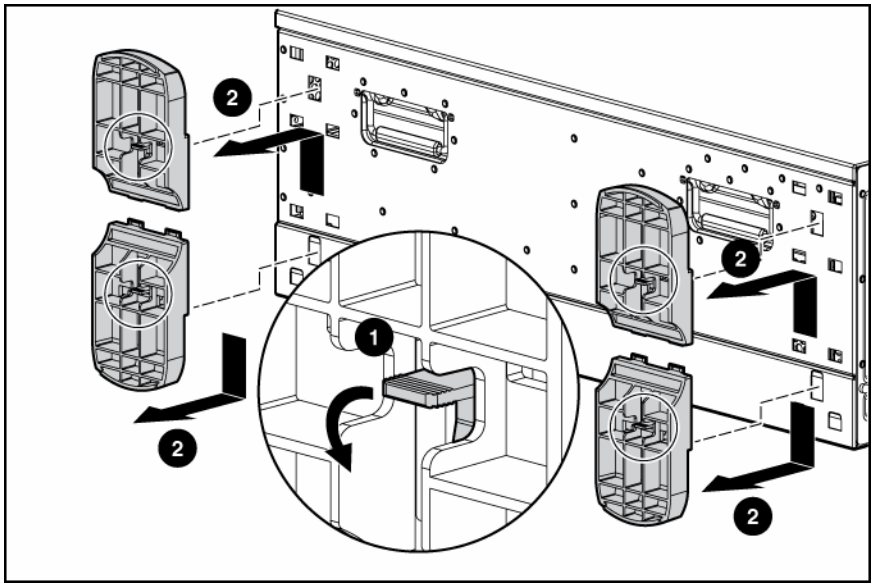
To replace the component, reverse the removal procedure.

Feet

NOTE: This procedure applies to tower servers only.

To remove the component:

1. Power down the server (on page 29).
2. Place the server on its side.
3. Remove the feet.

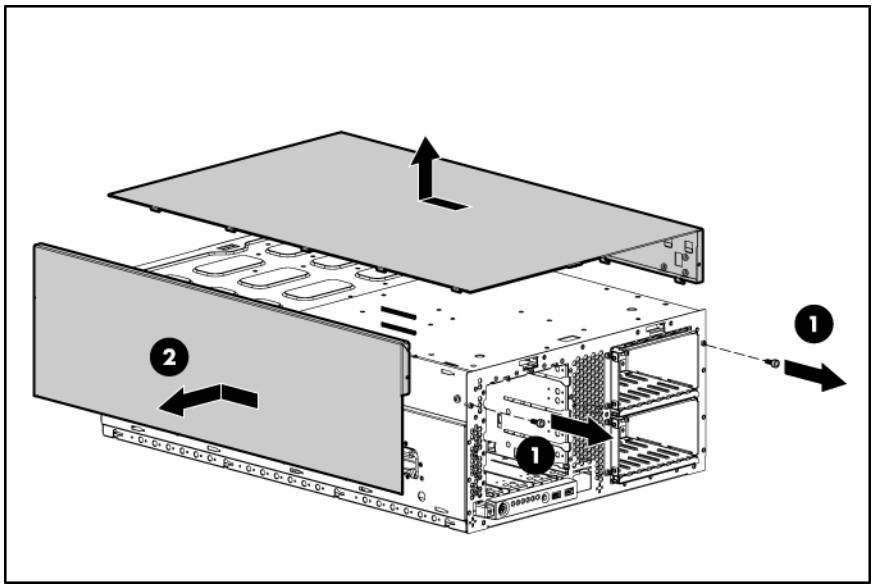


To replace the component, slide it back into the locking slot. Be sure that the foot clicks securely into the chassis. Repeat with the remaining feet, as necessary.

Tower configuration panels

To remove the component:

1. Power down the server (on page 29).
2. Remove the tower feet ("Feet" on page 32).
3. Remove the tower configuration panels:
   a. Use the T-10/T-15 Torx screwdriver to remove the two front panel screws.
   b. Remove the tower configuration panels.



To replace the component, reverse the removal procedure.

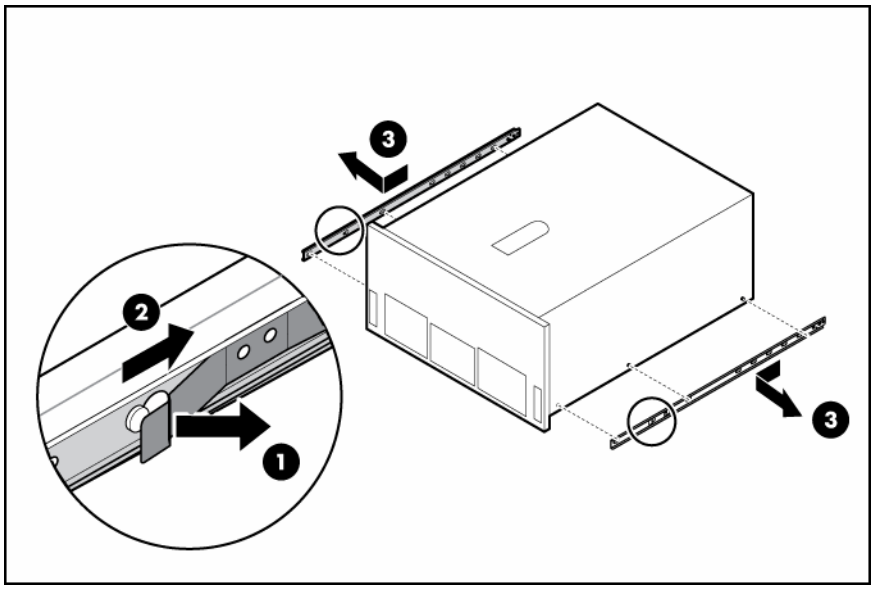
Rack rails

NOTE: This procedure applies to rack servers only.

To remove the component:

1. Power down the server (on page 29).
2. Remove the server from the rack (on page 29).
3. Pull the rack rail latch.
4. Slide the rail to the front of the server to release the rail.

5. Remove the rail.



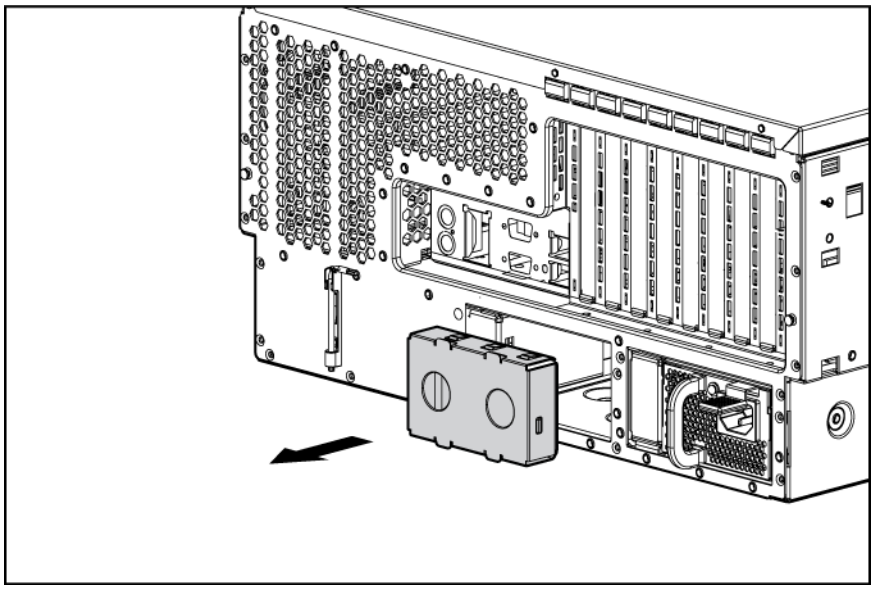
6. Repeat the steps to remove the other rail.

To replace the component, reverse the removal procedure.

Power supply blank

CAUTION: Do not attempt to remove and replace a power supply as a hot-plug procedure unless both bays are populated with power supplies.

Remove the component as indicated.



To replace the component, reverse the removal procedure.

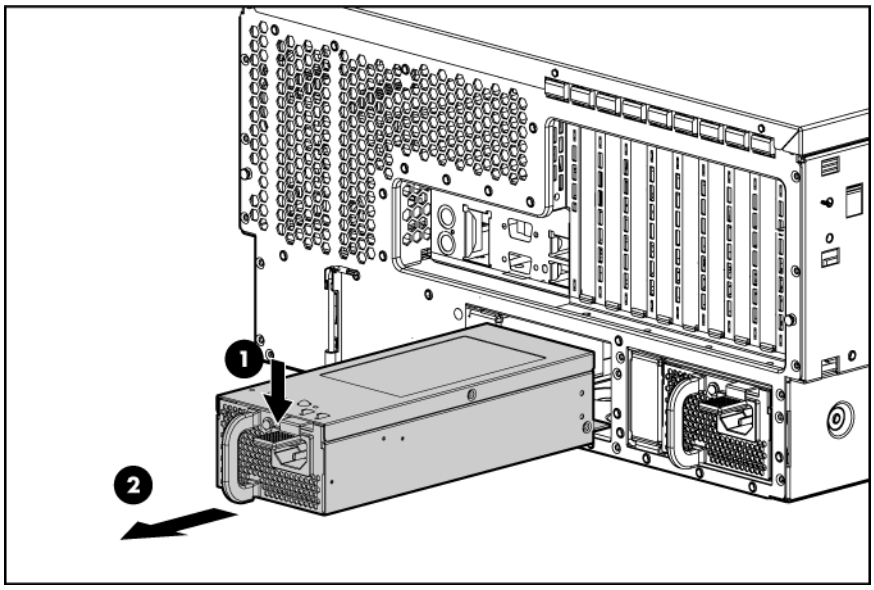
Hot-plug power supply

⚠ **WARNING: To reduce the risk of electric shock, do not disassemble the power supply or attempt to repair it. Replace it only with the specified spare part.**

△ **CAUTION:** Do not attempt to remove and replace a power supply as a hot-plug procedure unless both bays are populated with power supplies.

To remove the component:

1. Disconnect the power cord from the AC source.
2. Remove the power cord.
3. Remove the power supply.



△ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To replace the component, reverse the removal procedure.

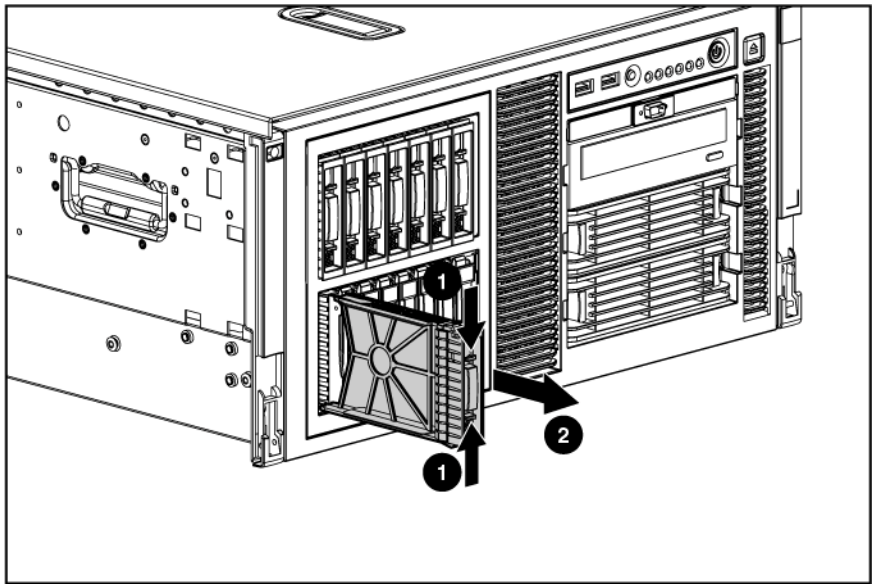
Hard drive blank

△ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To remove the component:

1. Unlock and open the front bezel ("Front bezel" on page 30) (tower servers only).

2. Remove the blank.



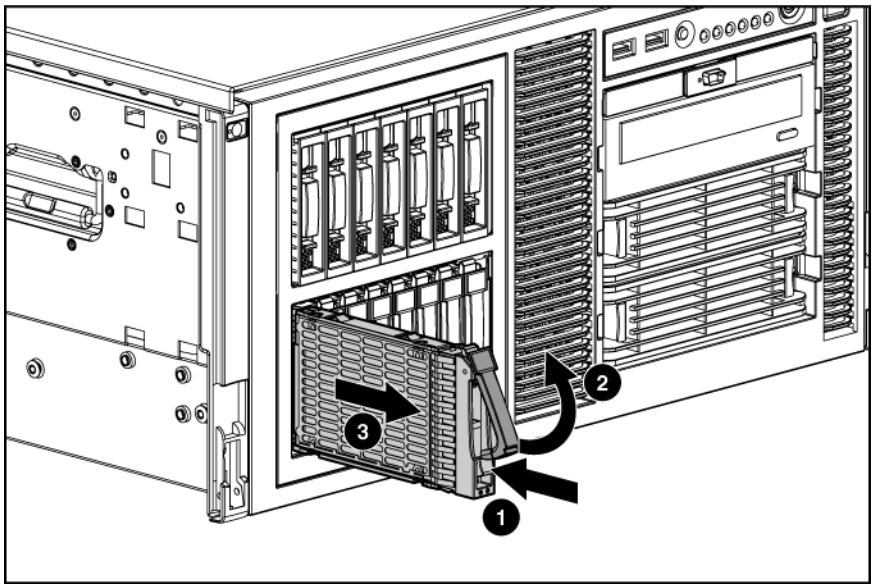
To replace the component, reverse the removal procedure.

Hard drive

To remove the component:

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

1. Determine the status of the hard drive from the hot-plug SAS hard drive LED combinations ("SAS and SATA hard drive LED combinations" on page 83).
2. Back up all server data on the hard drive.
3. Remove the hard drive.



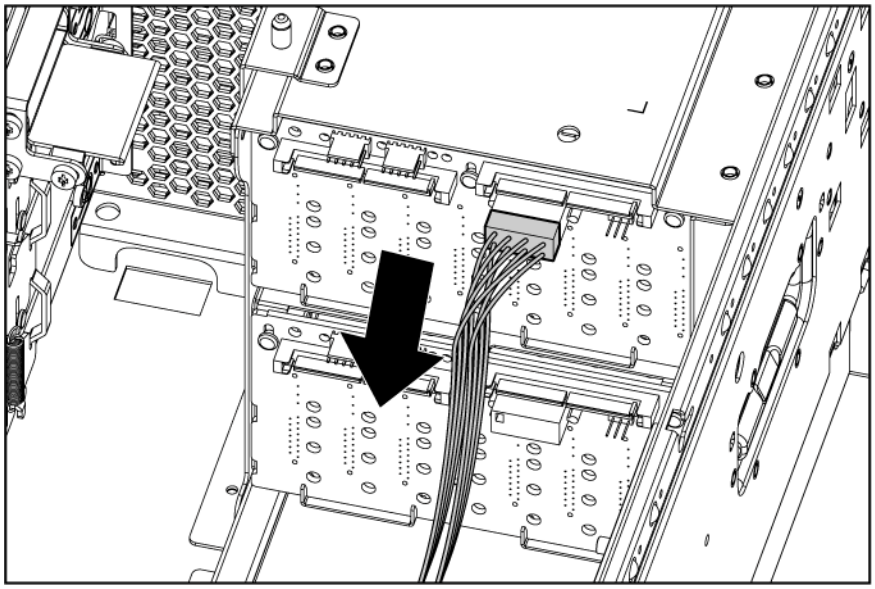
To replace the component, reverse the removal procedure.

Hard drive cage and backplane

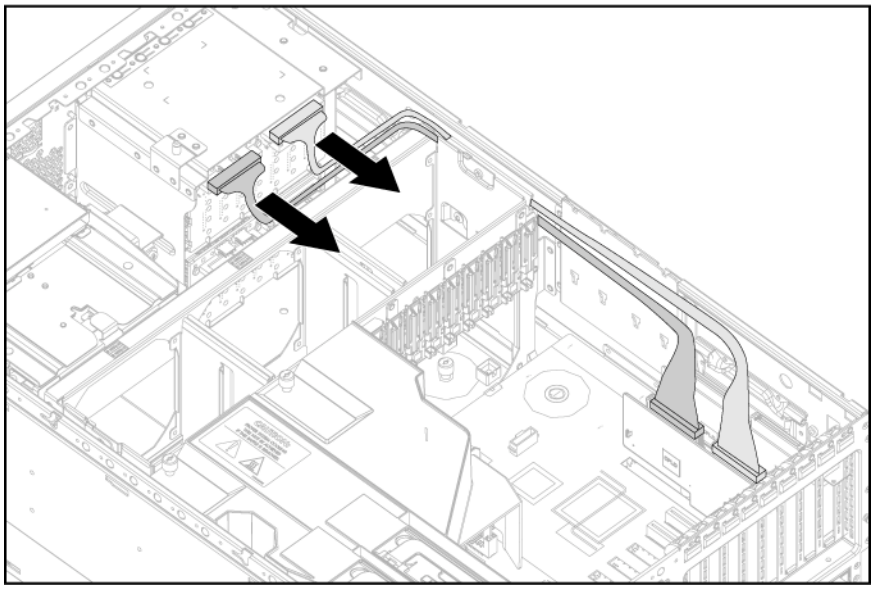
To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Open or remove the tower bezel, as needed ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the rack bezel (rack servers only) ("Rack bezel" on page 31).
5. Remove all hard drives ("Hard drive" on page 36) and hard drive blanks ("Hard drive blank" on page 35).
6. Disconnect the 10-pin power cable from the drive cage backplane.

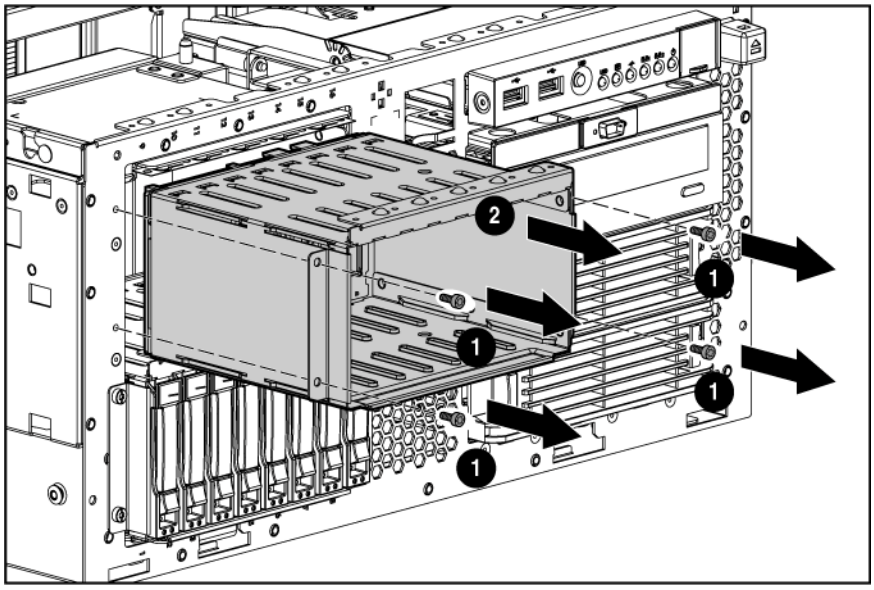
NOTE: The center wall is removed for illustration purposes only.



7. Disconnect the SAS-SATA cables from the SAS backplane.



8. Remove the four screws that secure the drive cage to the chassis.
9. Remove the SAS cage.



To replace the component, reverse the removal procedure.

System fans

The server supports redundant hot-plug fans to provide proper airflow to the system if a primary fan fails.

In the standard configuration, fans 1, 2, and 3 cool the server.

For the redundant configuration, fans 4, 5, and 6 are added to back up the primary fans. This configuration enables the server to continue operation in non-redundant mode, if a fan failure occurs.

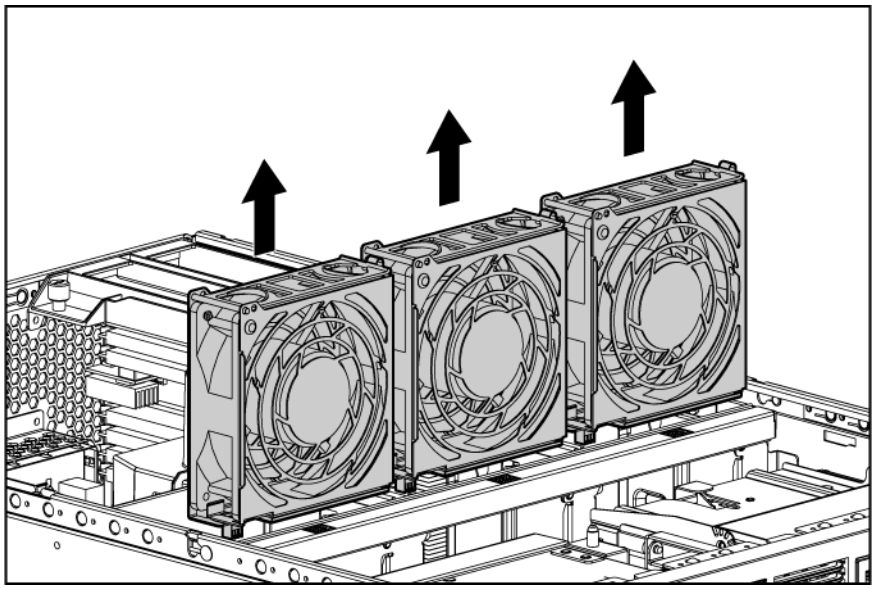
For fan locations, see "Identifying hot-plug fans."

All fans are identical. This procedure can be used for any of the six fan positions.

To remove the component:

1. Extend the server from the rack (on page 29).
2. Remove the access panel ("Access panel" on page 31).

3. Remove the fan.

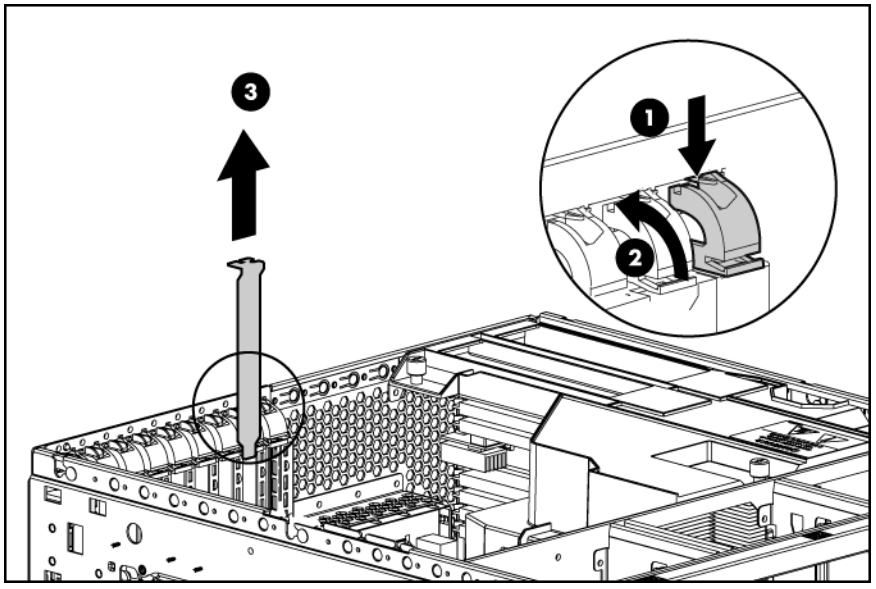


To replace the component, reverse the removal procedure.

Expansion slot cover

To remove the component:

1. Power down the server (on page 29).
2. Extend the server from the rack, if applicable ("Extend the server from the rack" on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Press the slot release lever and swing the slot release lever upward.
5. Remove the expansion slot cover.



Retain the slot cover for future use.

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

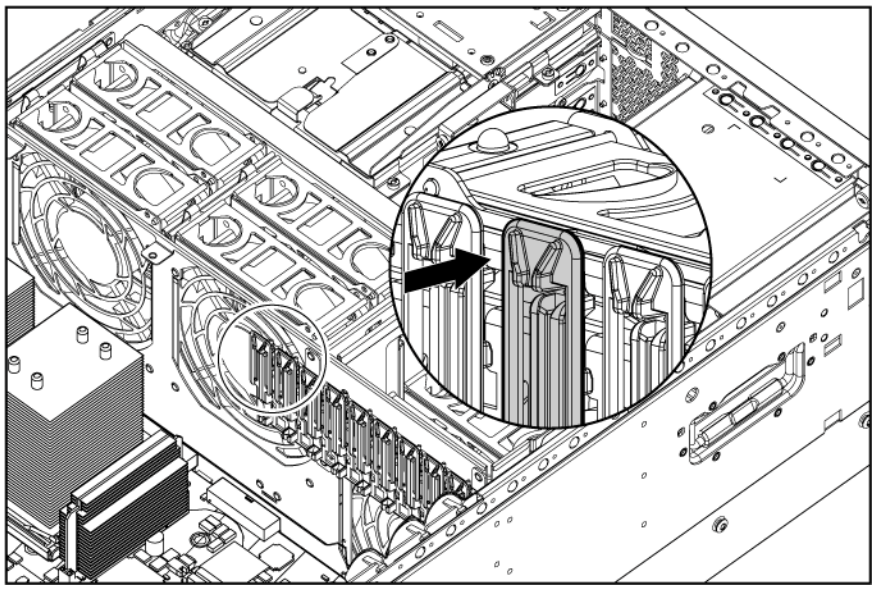
To replace the component, reverse the removal procedure.

Expansion board

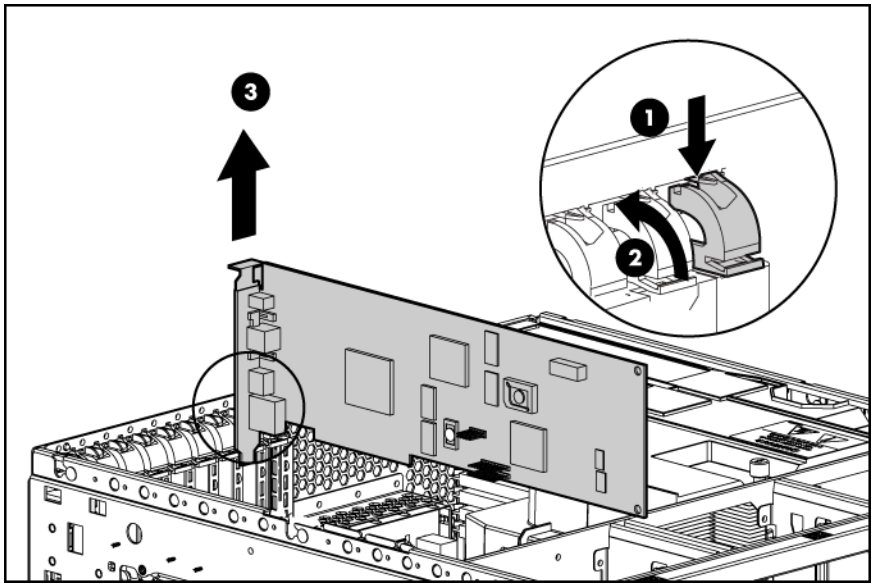
CAUTION: To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the expansion boards.

To remove the component:

1. Power down the server (on page 29).
2. Extend the server from the rack, if applicable ("Extend the server from the rack" on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Disconnect any cables attached to the expansion board.
5. Release the retainer clip.



6. Press the slot release lever and swing the slot release lever upward.
7. Remove the expansion board.



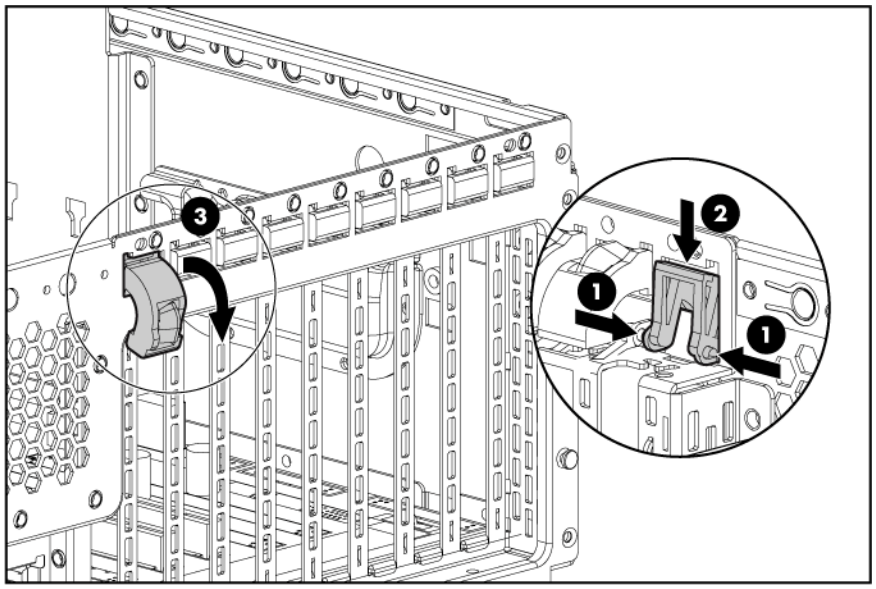
CAUTION: Make a note of board locations. Be sure to install replacements in the same slots.

To replace the component, reverse the removal procedure.

Slot release lever

To remove the component:

1. Power down the server (on page 29).
2. Extend the server from the rack, if applicable ("Extend the server from the rack" on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the expansion slot cover ("Expansion slot cover" on page 39).
5. Remove any expansion board installed in the slot ("Expansion board" on page 40).
6. From the rear of the chassis, push up on the lever locking tab.
7. Pull the release lever forward to disengage the rear tabs from the chassis wall.
8. Remove the slot release lever.



To replace the component, reverse the removal procedure.

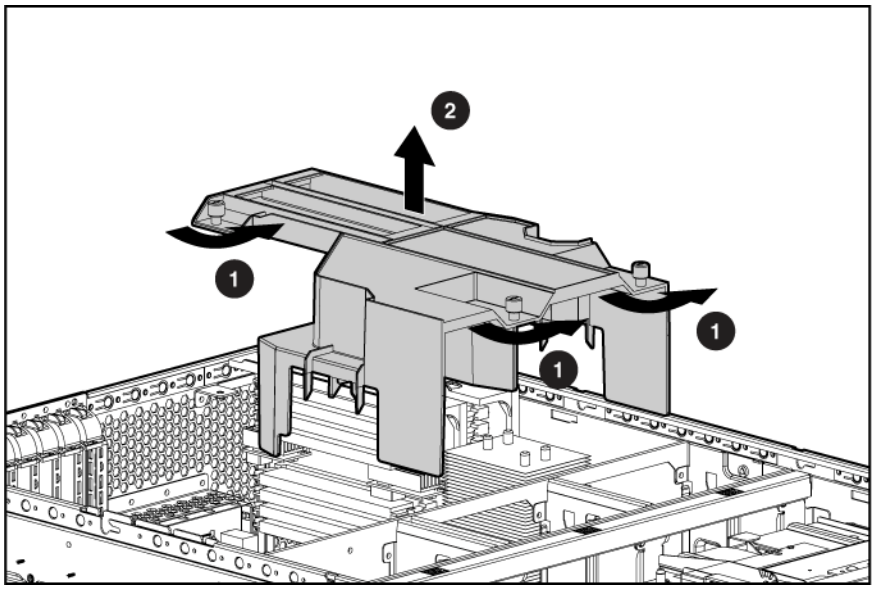
IMPORTANT: Be sure that the lever locking tab is locked into place. If the lever is not locked, it will not retain the expansion boards properly.

Processor air baffle

To remove the component:

1. Power down the server (on page 29).
2. Extend or remove the server from the rack ("Extend the server from the rack" on page 29, "Remove the server from the rack" on page 29).
3. Remove the access panel ("Access panel" on page 31).

4. Remove the processor air baffle.

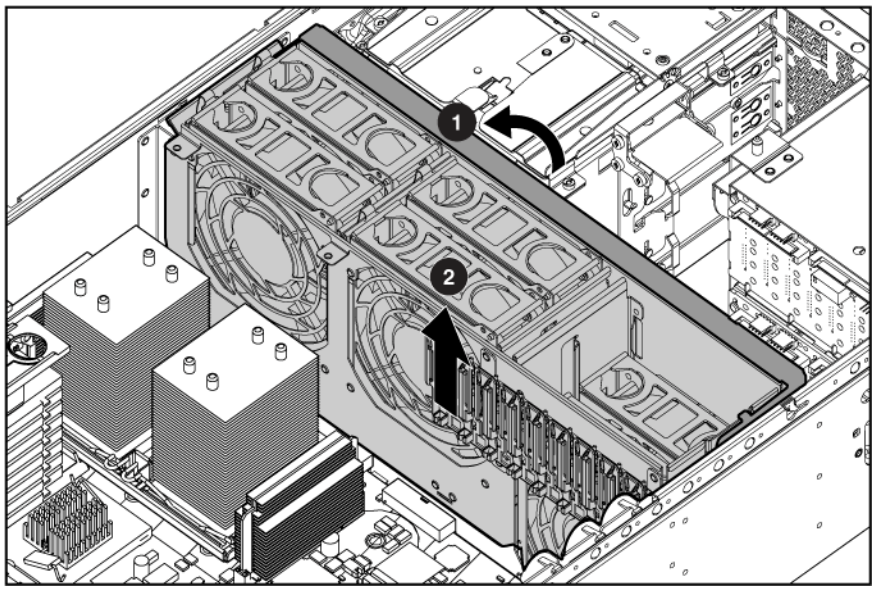


To replace the component, reverse the removal procedure.

Center wall

To remove the component:

1. Power down the server (on page 29).
2. Extend or remove the server from the rack ("Extend the server from the rack" on page 29, "Remove the server from the rack" on page 29).
3. Remove the access panel. ("Access panel" on page 31)
4. Remove the processor air baffle ("Processor air baffle" on page 41).
5. Remove the full-length expansion boards ("Expansion board" on page 40).
6. Lift the center wall retaining latch.
7. Remove the center wall.



To replace the component, reverse the removal procedure.

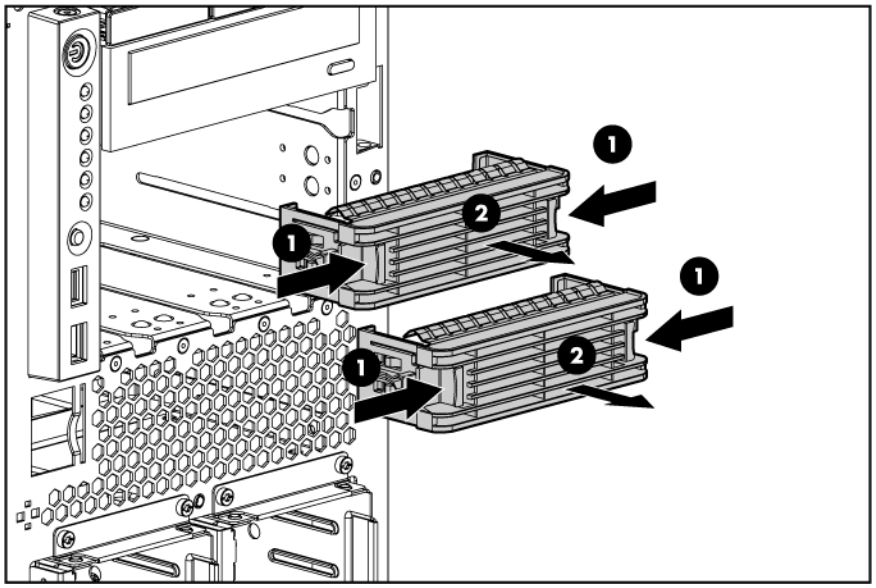
Media blanks

To remove the component:

1. Power down the server (on page 29).
2. Open or remove the tower bezel ("Front bezel" on page 30).

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

3. Remove the media blanks.



NOTE: HP recommends that you remove all media blanks to facilitate drive installation.

Retain the blanks for future use.

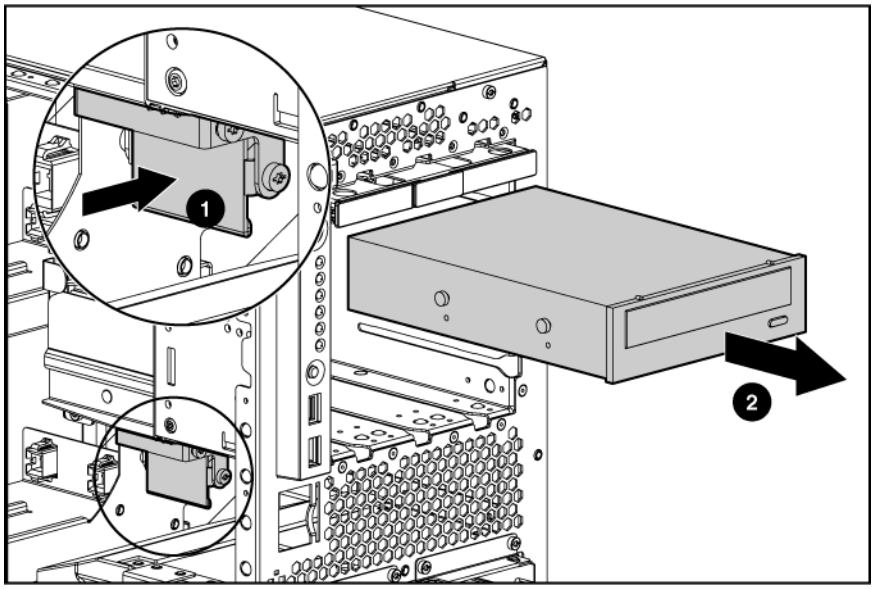
To replace the component, reverse the removal procedure.

Half-height or full-height media devices

To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).

4. Slide the media latch to release the drive and extend the drive from the bay to access the cabling.



CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

5. Disconnect the data and power cables from the device.
6. Remove the half-height or full-height drive.

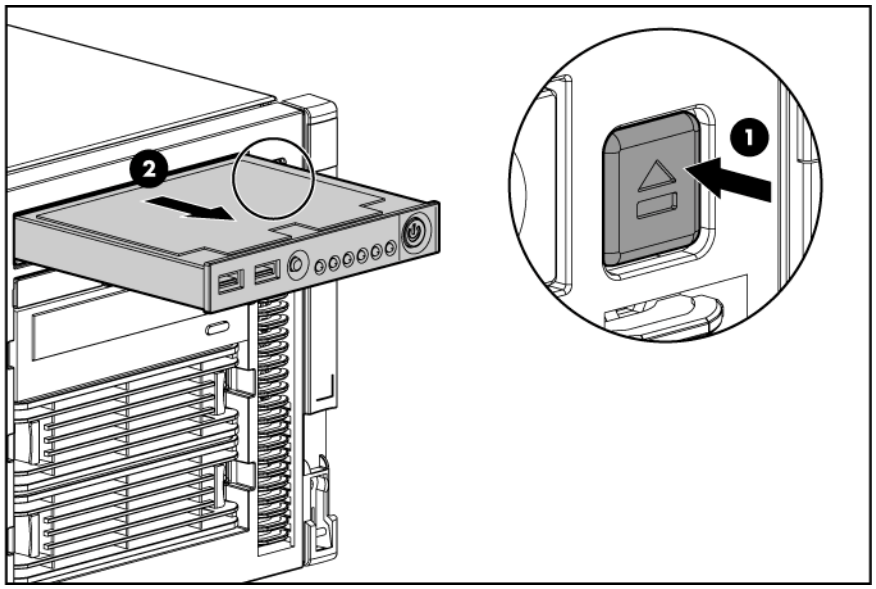
To replace the component, reverse the removal procedure.

Systems Insight Display

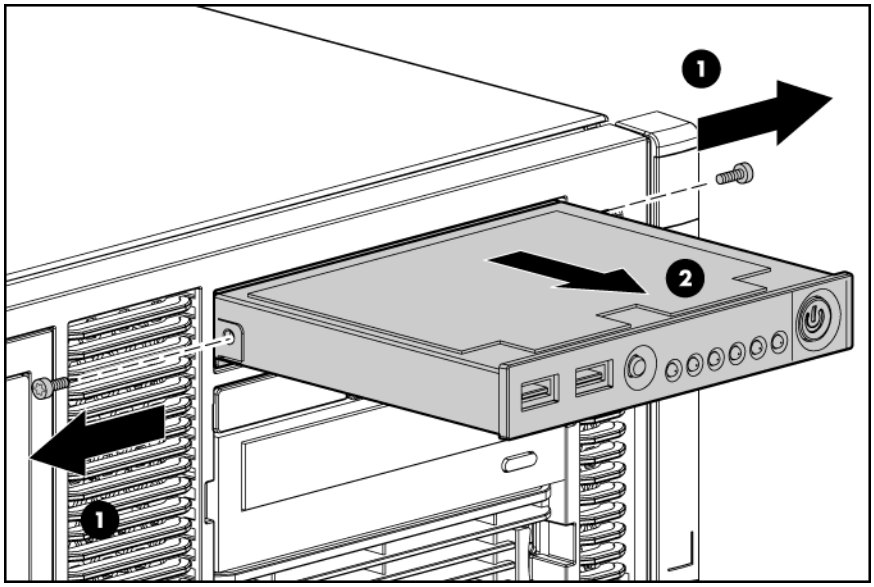
To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).

4. Press the HP Systems Insight Display ejector button to extend the HP Systems Insight Display.



5. Disconnect the Systems Insight Display cable from the system board ("System board components" on page 80).
6. Remove two T-10 screws on the side of the Systems Insight Display.
7. Remove the Systems Insight Display.



To replace the component, reverse the removal procedure.

Memory boards and FBDIMMs

The server utilizes two memory boards. Each memory board consists of eight slots, numbered sequentially. The paired banks are identified by the letters A through D. Each memory board supports 2x1 interleaving. For maximum performance, HP recommends that both memory boards be populated with the same total amount of memory to support 4x1 interleaving across both memory branches.

Observe the following warnings when performing a replacement procedure:

⚠ **WARNING: Always comply with all electrostatic and thermal guidelines to prevent bodily injury and ensure a properly functioning system when performing hot-plug operations.**

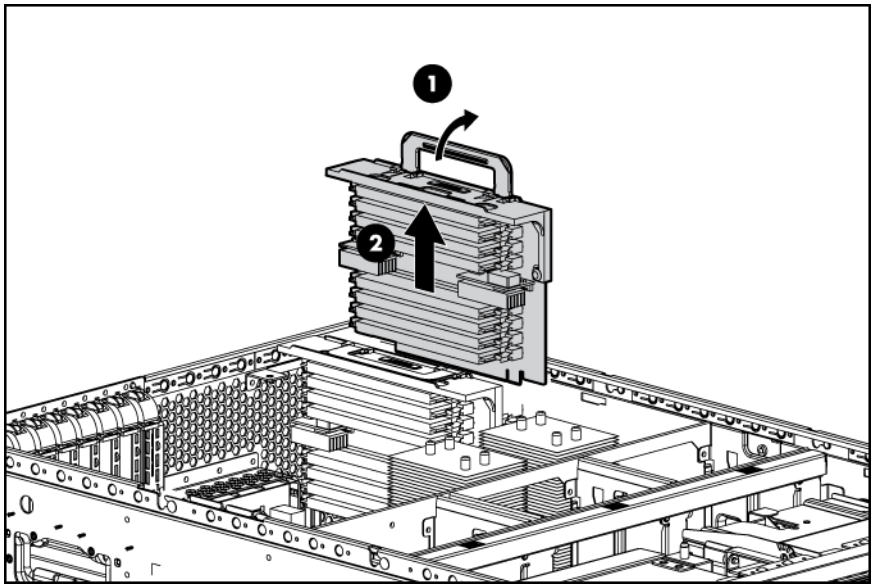
⚠ **WARNING: To prevent personal injury from hazardous energy:**

- **Remove watches, rings, or other metal objects.**
- **Use tools with insulated handles.**
- **Do not place tools or metal parts on top of batteries.**

Memory board

To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Open or remove the tower bezel, as needed ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the processor air baffle ("Processor air baffle" on page 41).
5. Remove the memory board and place it on a flat surface.



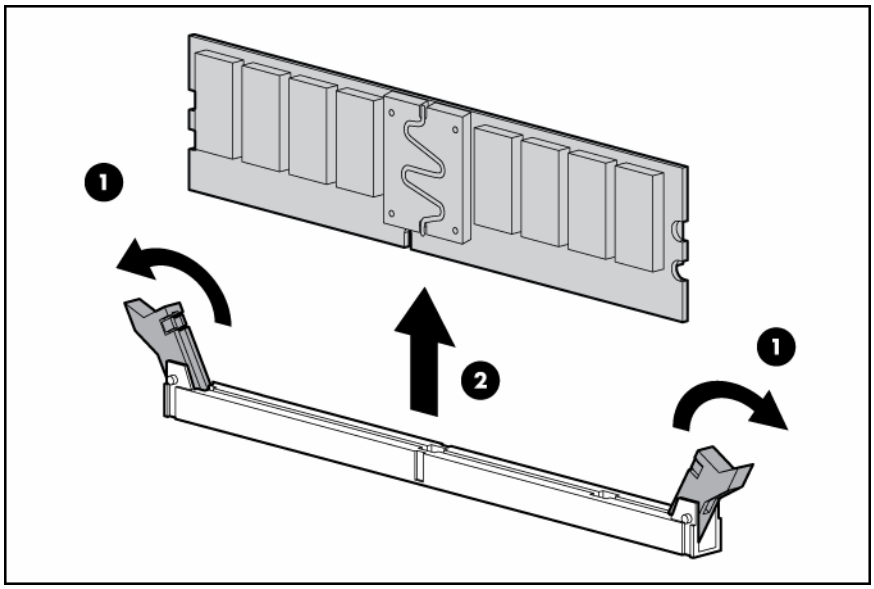
To replace the component, reverse the removal procedure.

FBDIMM

To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Open or remove the tower bezel, as needed ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the processor air baffle ("Processor air baffle" on page 41).
5. Remove a memory board ("Memory board" on page 46).

6. Remove the FBDIMM.



To replace the component, reverse the removal procedure.

Processor

CAUTION: To prevent possible server malfunction, do not mix processors of different speeds or cache sizes. Refer to the label on the processor heatsink for a description of the processor.

CAUTION: Be sure that you have the current version of the system ROM. Failure to flash the ROM with the correct version before installing or replacing the processor causes system failure. For the most current version of the ROM, go to the HP website (http://www.hp.com/support).

CAUTION: To avoid damage to the system board:

- Do not touch the socket contacts.
- Always install the processor socket cover after removing the processor from the socket.
- Do not tilt or slide the processor when lowering the processor into the socket.

CAUTION: To avoid damage to the processor:

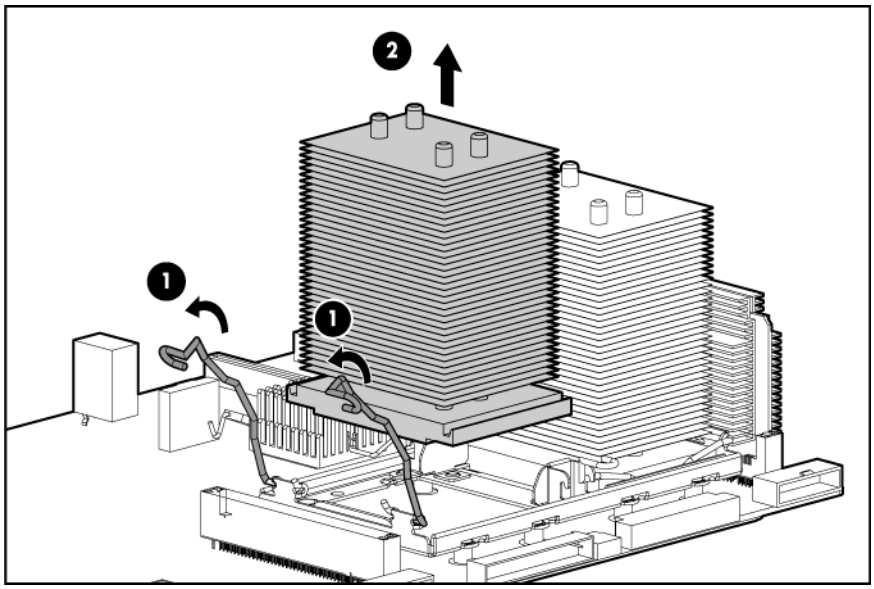
- Handle the processor only by the edges.
- Do not touch the bottom of the processor, especially the contact area.

IMPORTANT: Processor socket 1 must always be populated. If processor socket 1 is empty, the server does not power up.

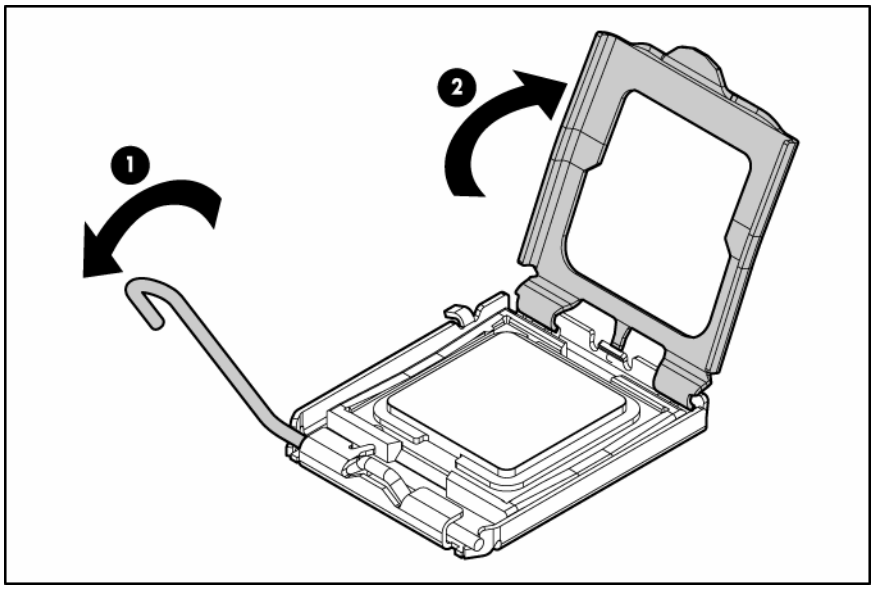
To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the processor air baffle ("Processor air baffle" on page 41).
5. Open the heatsink retaining latches.

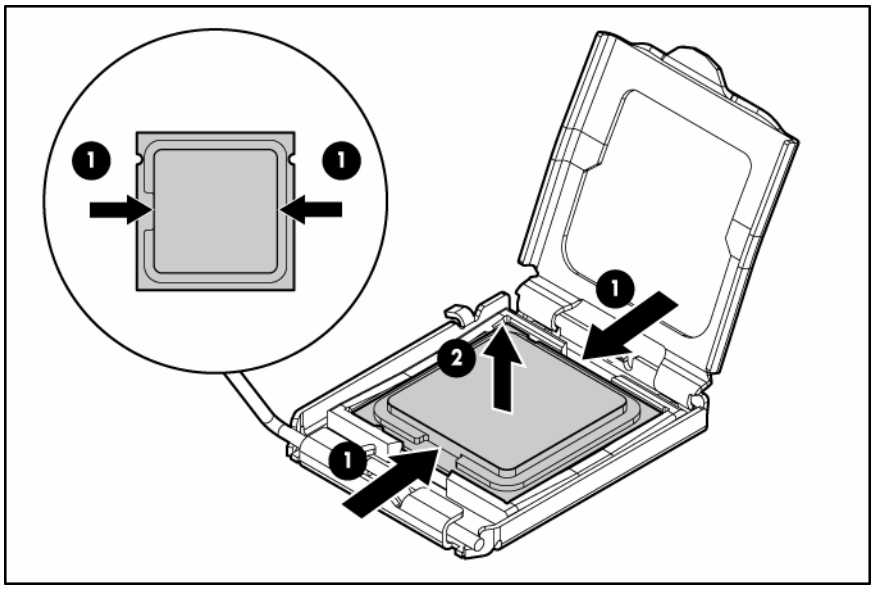
6. Remove the heatsink.



7. Open the processor retaining latch and the processor socket retaining bracket.



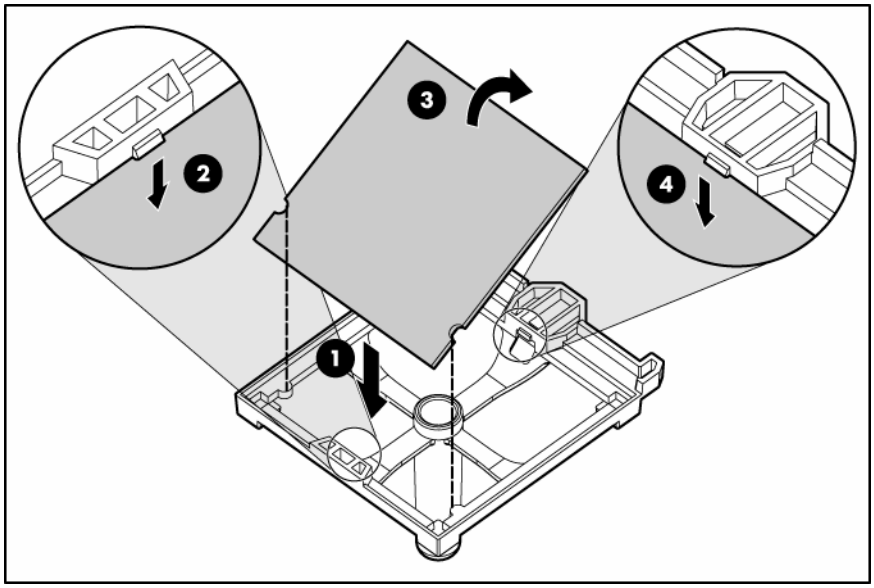
8. Using your fingers, remove the failed processor.



To replace the component:

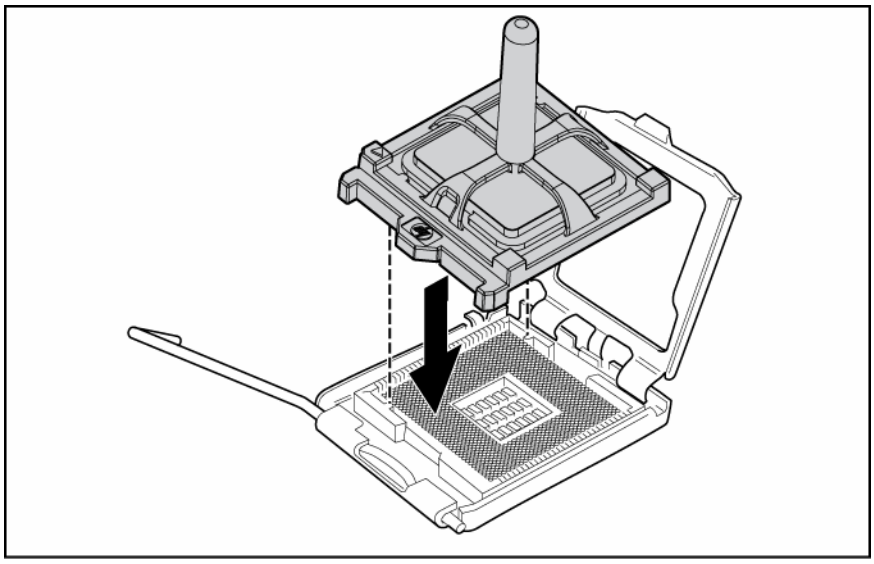
IMPORTANT: Be sure the processor remains inside the processor installation tool.

1. If the processor has separated from the installation tool, carefully re-insert the processor in the tool.

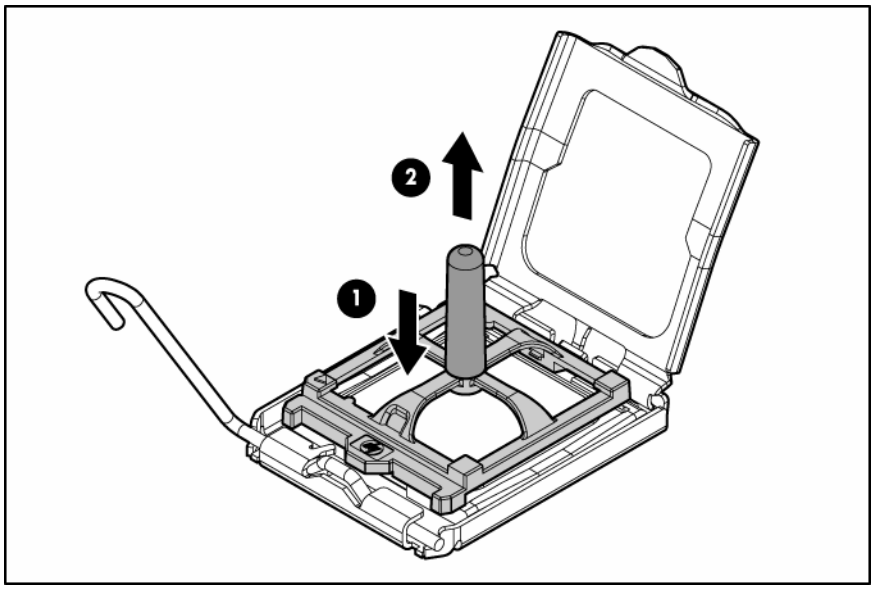


2. Align the processor installation tool with the socket and install the spare processor.

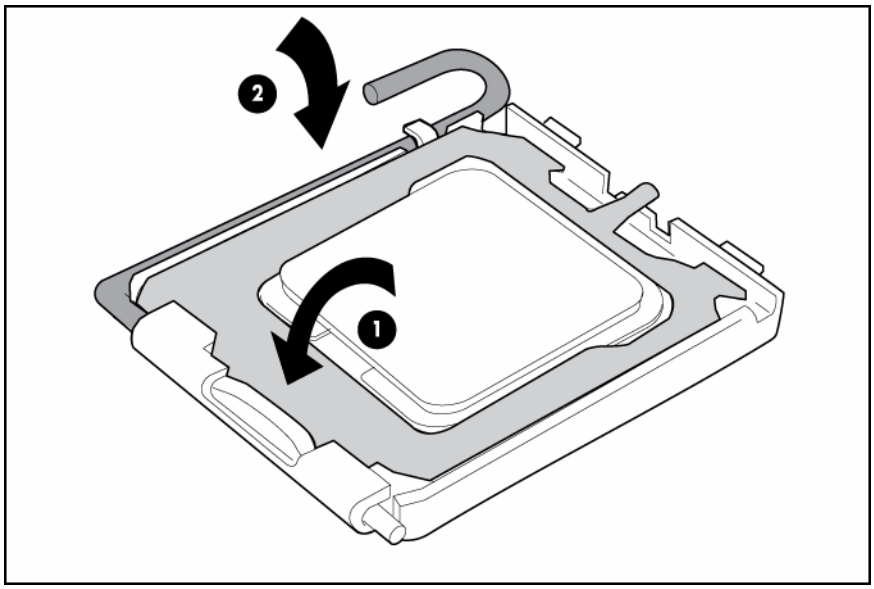
△ **CAUTION:** The processor is designed to fit one way into the socket. Use the alignment guides on the processor and socket to properly align the processor with the socket. Refer to the server hood label for specific instructions.



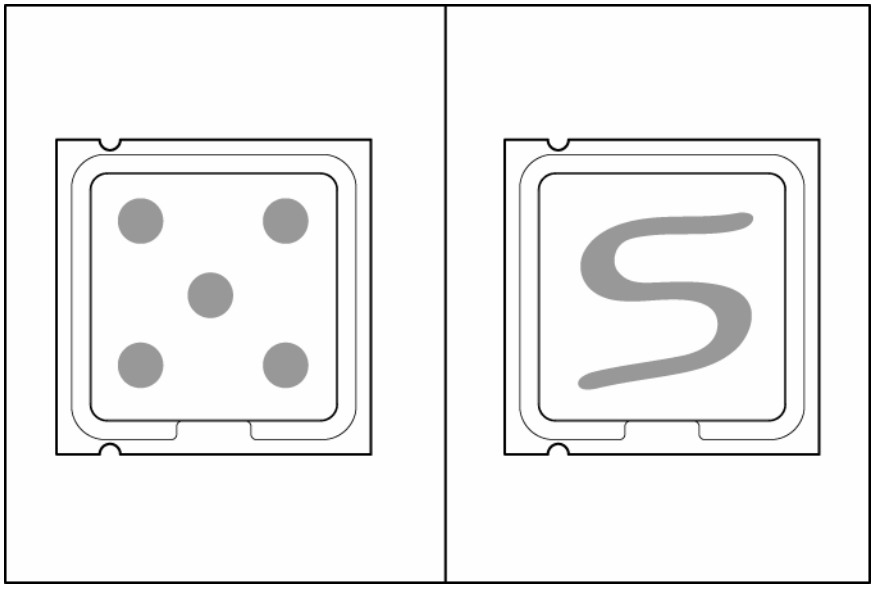
3. Press down firmly until the processor installation tool clicks and separates from the processor, and then remove the processor installation tool.



4. Close the processor retaining latch and the processor socket retaining bracket.

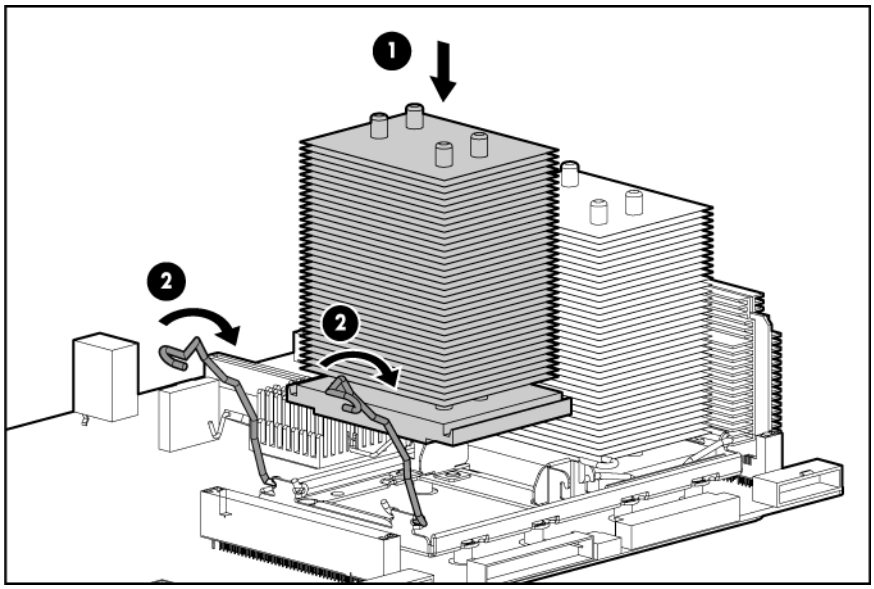


5. Clean the old thermal grease from the heatsink with the alcohol swab. Allow the alcohol to evaporate before continuing.
6. Apply all the grease to the top of the processor in one of the following patterns to ensure even distribution:



7. Install the heatsink.

8. Close the heatsink retaining latches.



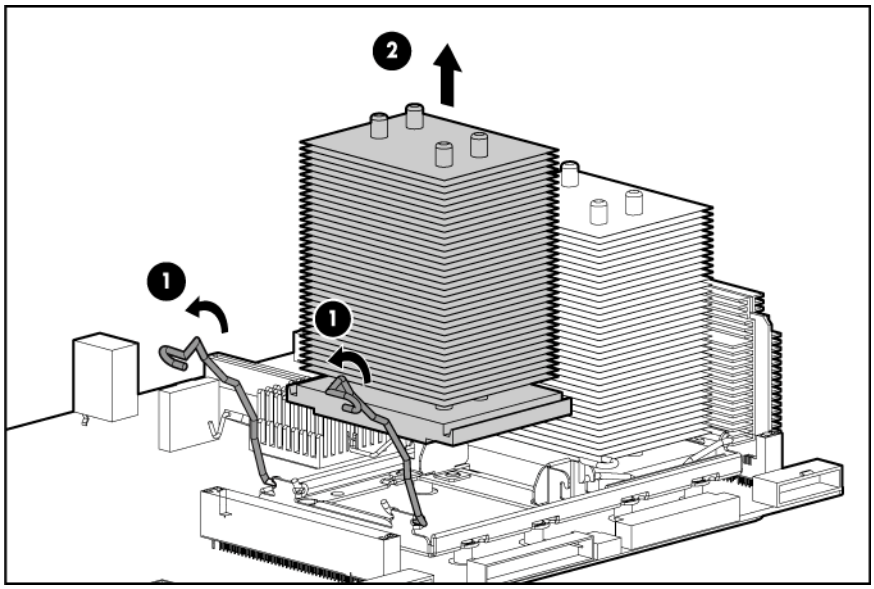
9. Install the processor air baffle.
10. Install the access panel.
11. Do one of the following:
    - Install and lock the bezel.
    - Slide the server back into the rack.
12. Power up the server.

Heatsink

To remove the component:

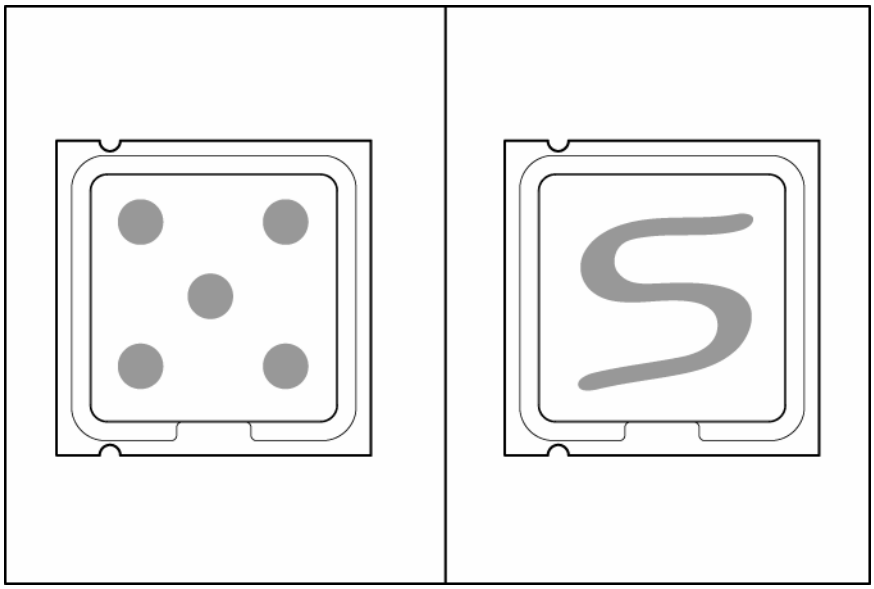
1. Power down the server (on page 29).
2. Do one of the following:
    - Unlock and remove the bezel ("Front bezel" on page 30).
    - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the processor air baffle ("Processor air baffle" on page 41).
5. Open the heatsink retaining latches.

6. Remove the heatsink.



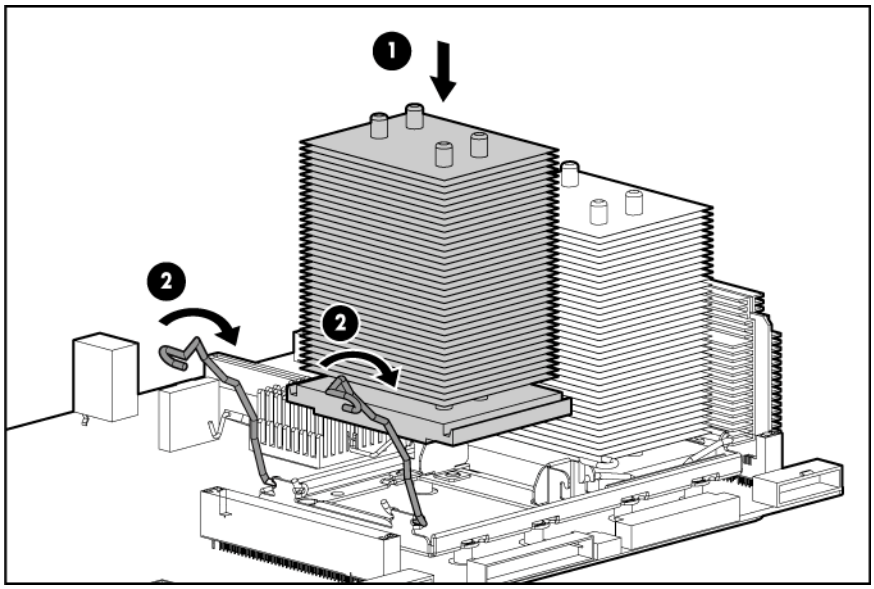
To replace the heatsink:

1. Clean the old thermal grease from the heatsink and processor with the alcohol swab. Allow the alcohol to evaporate before continuing.
2. Apply all the grease to the top of the processor in one of the following patterns to ensure even distribution.



3. Install the heatsink.

4. Close the heatsink retaining latches.



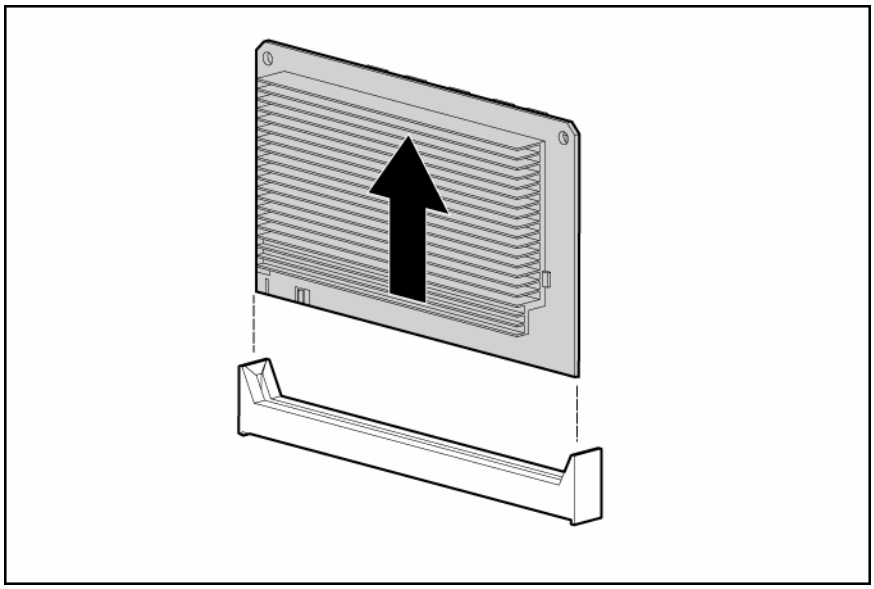
5. Install the processor air baffle.
6. Install the access panel.
7. Do one of the following:
   - Install and lock the bezel.
   - Slide the server back into the rack.
8. Power up the server.

PPM

To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the processor air baffle ("Processor air baffle" on page 41).

5. Remove the PPM.



NOTE: The appearance of compatible PPMs may vary.

To replace the component, reverse the removal procedure.

CAUTION: Only install a PPM if the processor is installed. Both the PPM and the processor must be installed together, otherwise the system does not boot.

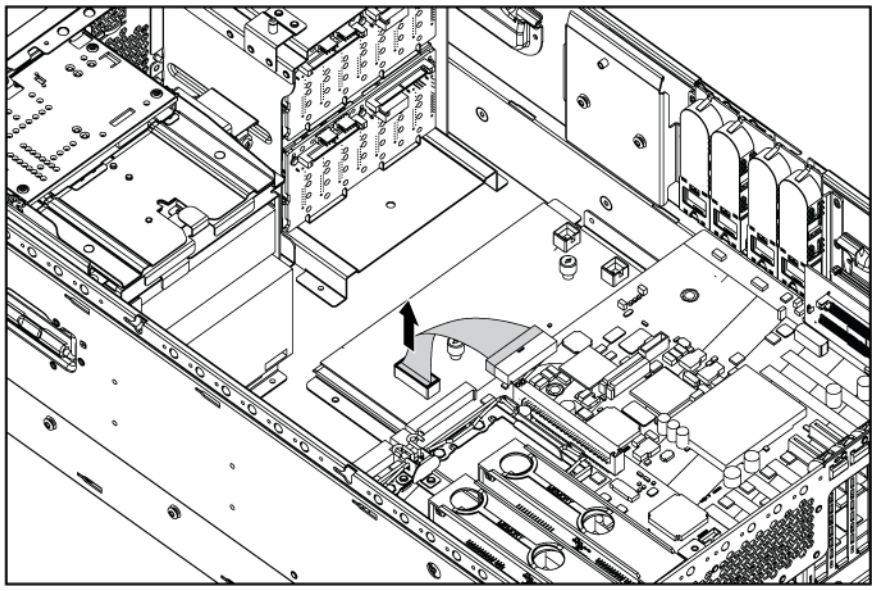
IMPORTANT: PPMs do not seat if turned the wrong way.

Power supply backplane

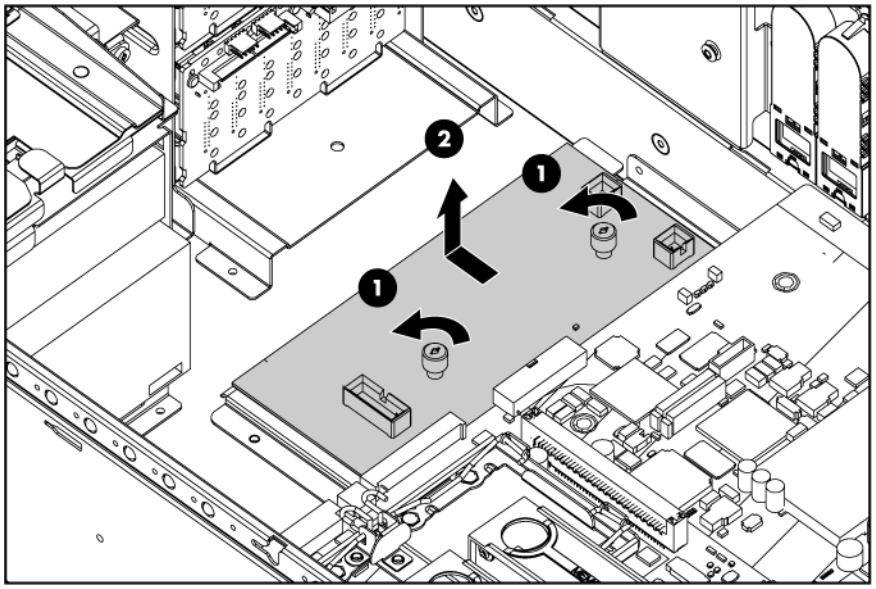
To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove all hot-plug power supplies ("Hot-plug power supply" on page 35).
4. Remove the access panel ("Access panel" on page 31).
5. Remove all expansion boards ("Expansion board" on page 40).
6. Remove the processor air baffle ("Processor air baffle" on page 41).
7. Remove the center wall ("Center wall" on page 42).

8. Disconnect the signal cable from the power supply backplane.



9. Disconnect all cables from the system board, as necessary, to access the power supply backplane.
10. Remove the power supply backplane.



To replace the component, reverse the removal procedure.

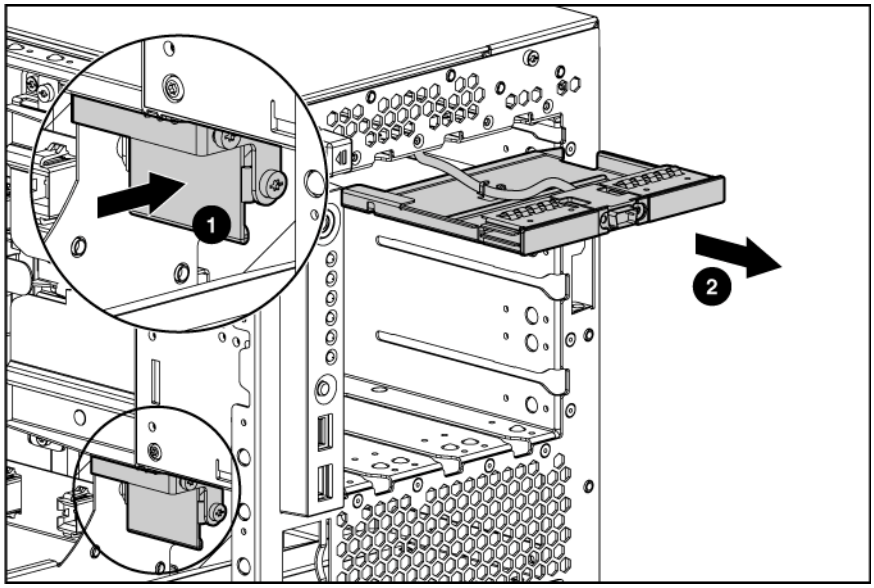
IMPORTANT: Be sure to align the two retaining guides on the chassis with the holes on the power supply backplane when replacing it.

Video connector

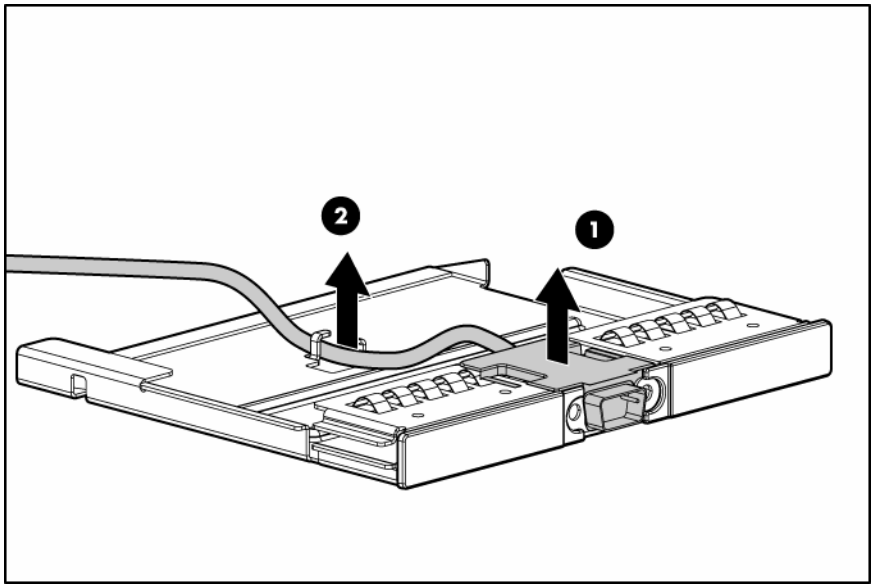
To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).

3. Remove the access panel ("Access panel" on page 31).
4. Remove all expansion boards ("Expansion board" on page 40).
5. Remove the processor air baffle ("Processor air baffle" on page 41).
6. Remove the center wall ("Center wall" on page 42).
7. Remove the memory board ("Memory board" on page 46).
8. Disconnect the cable from the internal video connector on the system board.
9. Extend or remove the media bay spacer from the chassis.



10. Remove the video connector.
11. Remove the cable from the clip on the media bay spacer.



To replace the component, reverse the removal procedure.

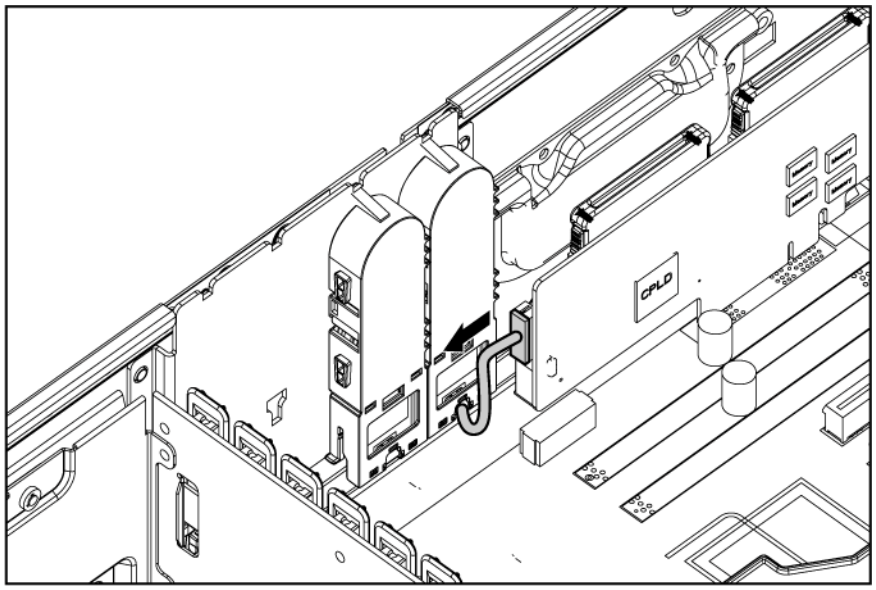
BBWC battery pack

CAUTION: To prevent a server malfunction or damage to the equipment, do not add or remove the battery pack while an array capacity expansion, RAID level migration, or stripe size migration is in progress.

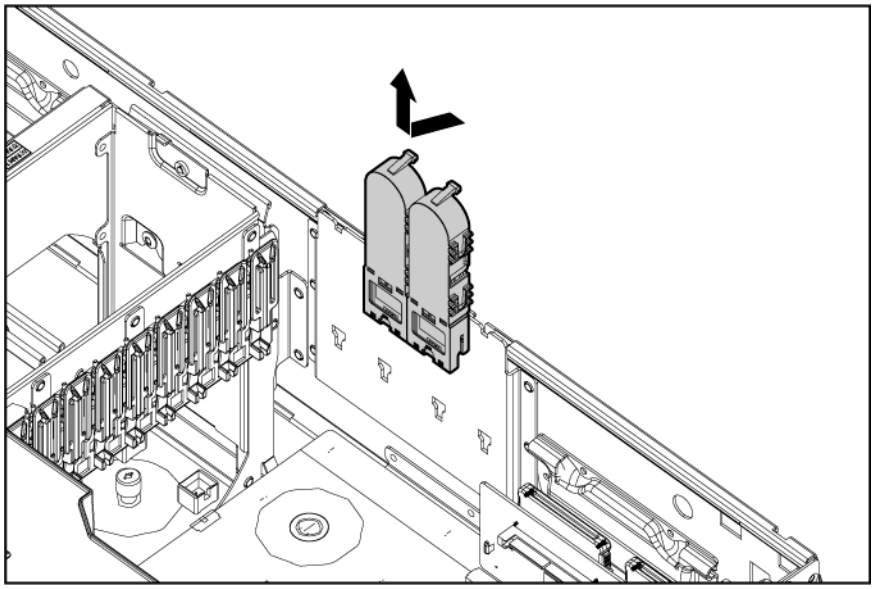
CAUTION: After the server is powered down, wait 15 seconds and then check the amber LED before unplugging the cable from the cache module. If the amber LED blinks after 15 seconds, do not remove the cable from the cache module. The cache module is backing up data, and data is lost if the cable is detached.

To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Disconnect the cable from the cache module only if the battery pack is not being used to recover data from the server or transfer data to another server.



5. Remove the battery pack.



To replace the component, reverse the removal procedure.

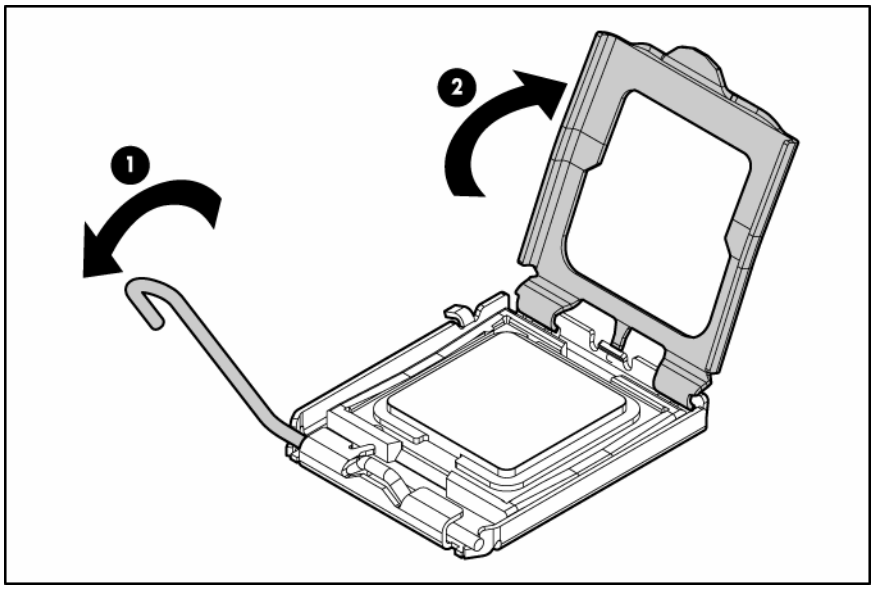
System board

IMPORTANT: If replacing the system board or clearing NVRAM, you must re-enter the server serial number through RBSU.

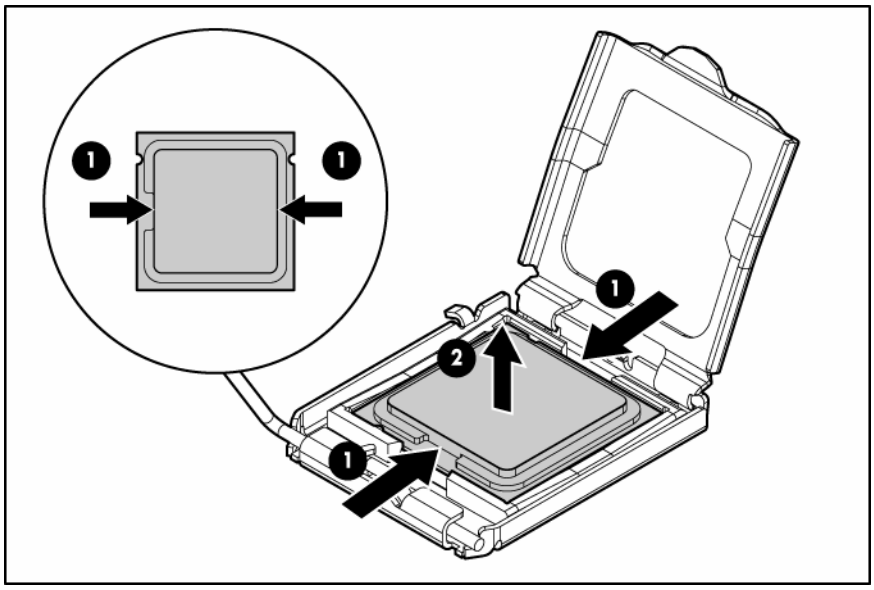
To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Unlock and remove the bezel ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove all expansion boards ("Expansion board" on page 40).
5. Remove the processor air baffle ("Processor air baffle" on page 41).
6. Remove the center wall ("Center wall" on page 42).
7. Remove the memory board ("Memory board" on page 46).
8. Remove the PPM ("PPM" on page 54).
9. Disconnect all cables attached to the system board.
10. Remove the heatsink (on page 52).

11. Open the processor retaining latch and the processor socket retaining bracket.



12. Using your fingers, remove the processor from the failed system board.



△ **CAUTION:** To avoid damage to the system board:

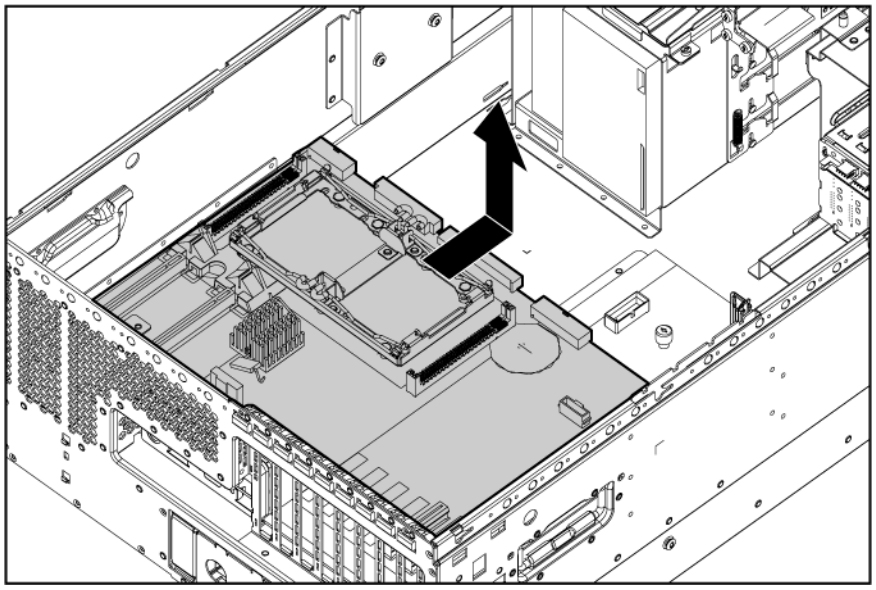
- Do not touch the socket contacts.
- Always install the processor socket cover after removing the processor from the socket.
  - Do not tilt or slide the processor when lowering the processor into the socket.

△ **CAUTION:** To avoid damage to the processor:

- Handle the processor only by the edges.
  - Do not touch the bottom of the processor, especially the contact area.

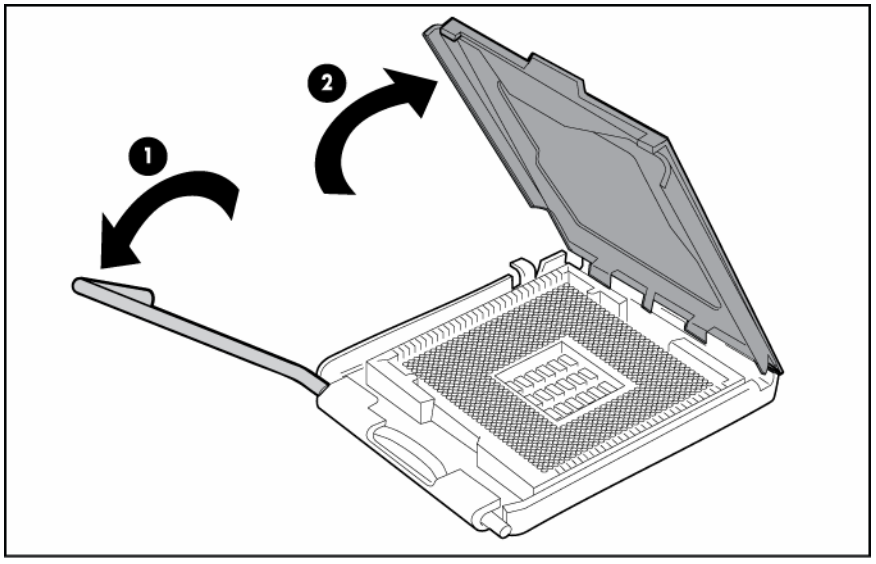
13. Loosen the two thumbscrews securing the system board to the chassis.
14. Slide the system board toward the front of the chassis to release it from the two retaining guides.

15. Lift the system board out of the chassis and tilt it to one side to clear the cable guide.

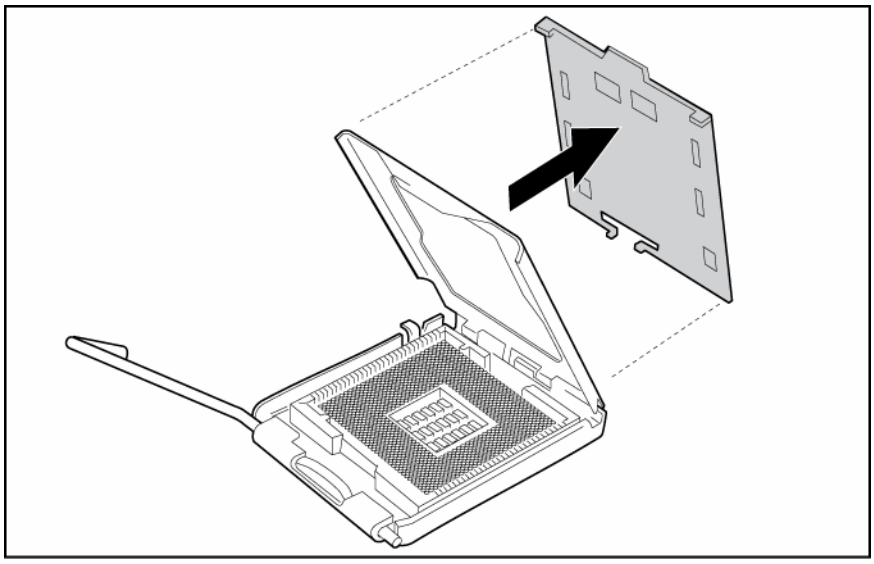


To replace the system board:

1. Install the spare system board in the server before installing the processor.
2. Prepare the processor socket on the spare system board:
   a. Open the processor retaining latch and the processor socket retaining bracket.



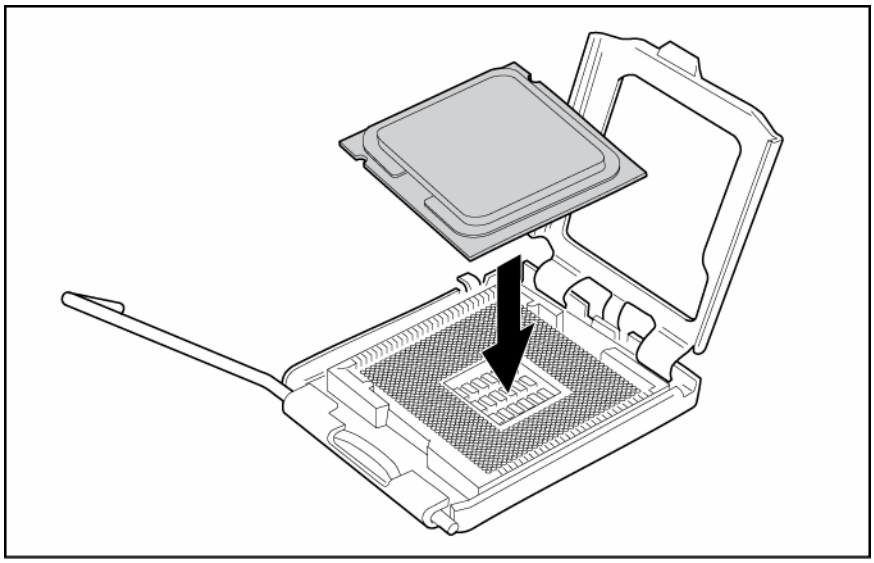
b. Remove the processor socket protective cover.



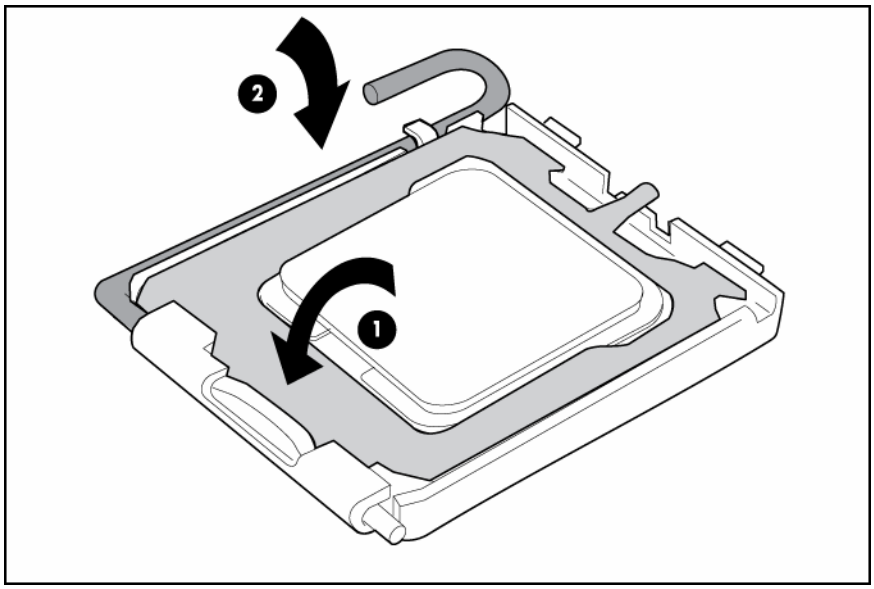
3. Install the processor socket cover onto the processor socket of the failed system board. The cover protects the socket during shipping when the failed board is returned.
4. Install the processor onto the spare system board.

△ **CAUTION:** The processor is designed to fit one way into the socket. Use the alignment guides on the processor and socket to properly align the processor with the socket. Refer to the server hood label for specific instructions.

△ **CAUTION:** Always install the processor parallel to the system board to avoid damage to the pins.

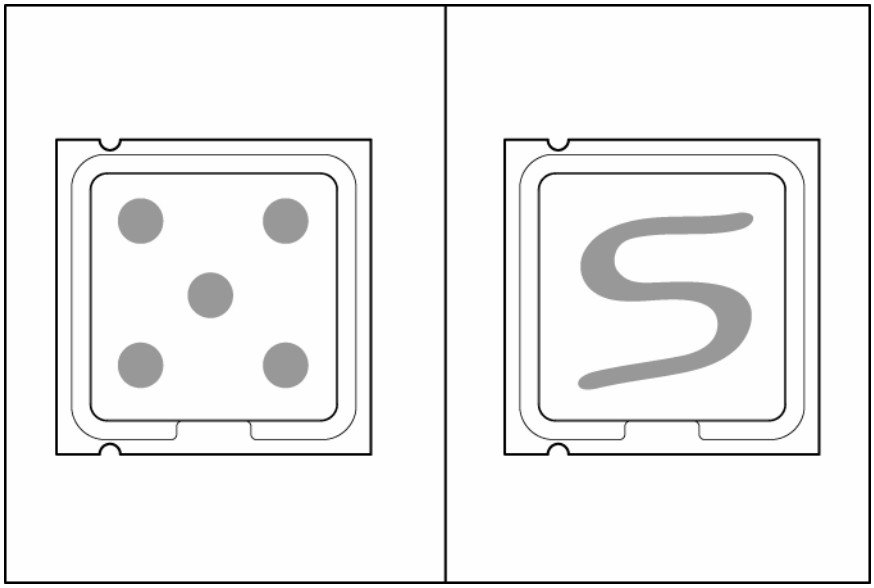


5. Close the processor retaining latch and the processor socket retaining bracket.



6. Clean the old thermal grease from the heatsink and the top of the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.
7. Apply all the grease to the top of the processor in one of the following patterns to ensure even distribution.

CAUTION: The heatsink thermal interface media is not reusable and must be replaced if the heatsink is removed from the processor after it has been installed.



8. Install the heatsink ("Heatsink" on page 52).

IMPORTANT: To ensure proper cooling, be sure the processor air baffle is installed at all times (if applicable).

9. Install all other components removed.
10. Power up the server.

After you replace the system board, you must re-enter the server serial number and the product ID.

1. During the server startup sequence, press the **F9** key to access RBSU.

2. Select the **System Options** menu.
3. Select **Serial Number**. The following warning is displayed:

   ```
   WARNING! WARNING! WARNING! The serial number is loaded into the system
   during the manufacturing process and should NOT be modified. This option
   should only be used by qualified service personnel. This value should
   always match the serial number sticker located on the chassis.
   ```

4. Press the **Enter** key to clear the warning.
5. Enter the serial number and press the **Enter** key.
6. Select **Product ID**.
7. Enter the product ID and press the **Enter** key.
8. Press the **Esc** key to close the menu.
9. Press the **Esc** key to exit RBSU.

Press the **F10** key to confirm exiting RBSU. The server will automatically reboot.

Battery

If the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

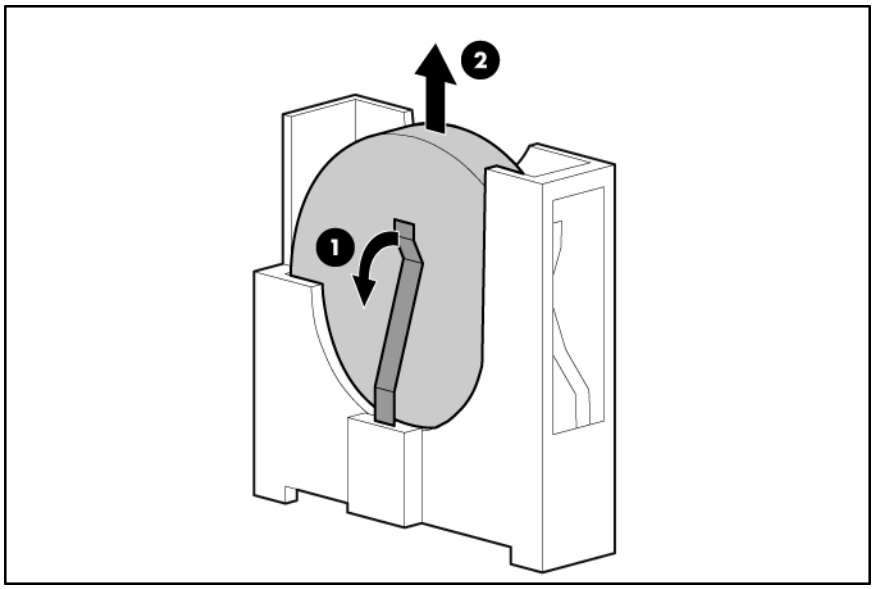
⚠ **WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:**

- **Do not attempt to recharge the battery.**
- **Do not expose the battery to temperatures higher than 60°C (140°F).**
- **Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.**
- **Replace only with the spare designated for this product.**

To remove the component:

1. Power down the server (on page 29).
2. Do one of the following:
   - Open or remove the tower bezel, as needed ("Front bezel" on page 30).
   - Extend the server from the rack (on page 29).
3. Remove the access panel ("Access panel" on page 31).
4. Remove the processor air baffle ("Processor air baffle" on page 41).

5. Remove the battery.



IMPORTANT: Replacing the system board battery resets the system ROM to its default configuration. After replacing the battery, reconfigure the system through RBSU.

To replace the component, reverse the removal procedure.

For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

Cabling

In this section

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Parallel/serial port cabling 69
BBWC option cabling 69
Internal USB connector 70
Storage device cabling guidelines 70
HP Systems Insight Display cabling 70

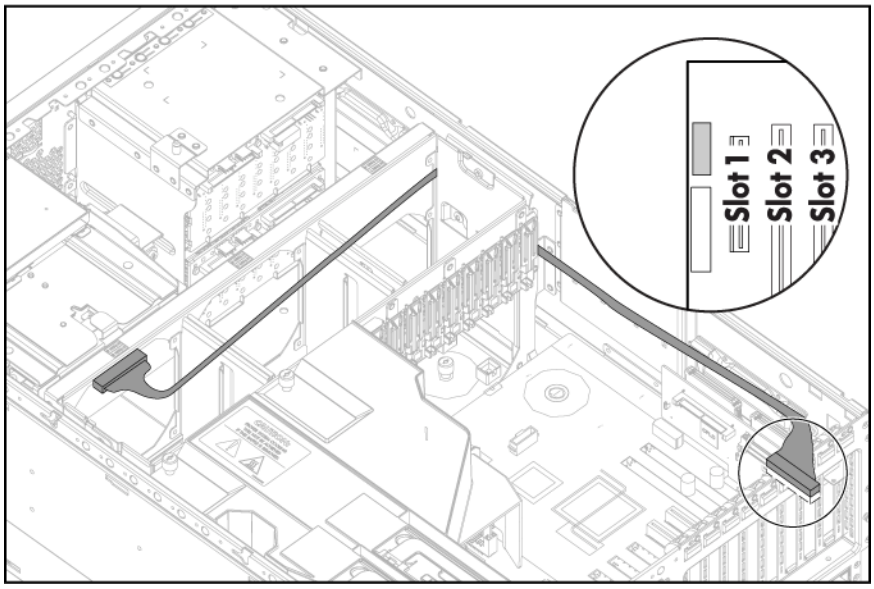
Cabling overview

This section provides guidelines that help you make informed decisions about cabling the server and hardware options to optimize performance.

For information on cabling peripheral components, refer to the white paper on high-density deployment at the HP website (http://www.hp.com/products/servers/platforms).

CAUTION: When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

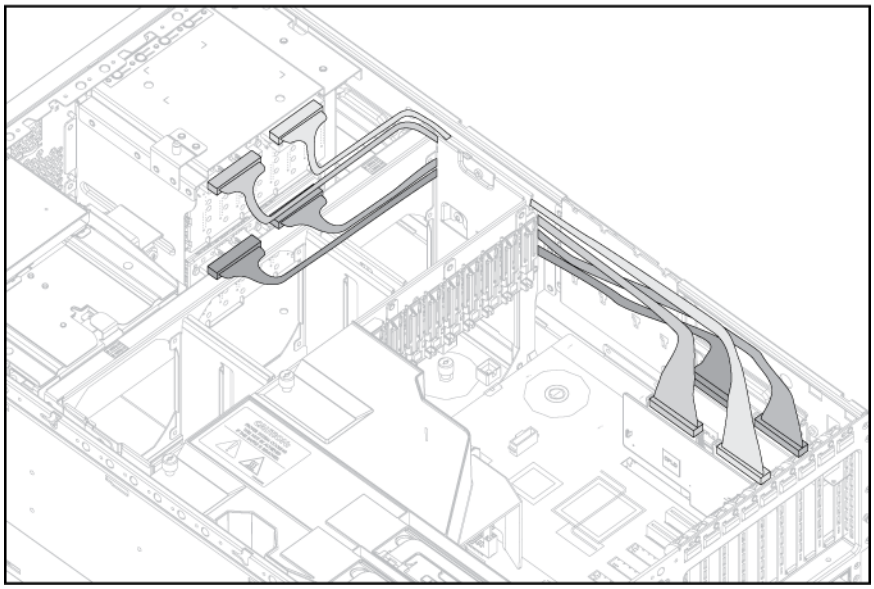
Diskette drive cabling



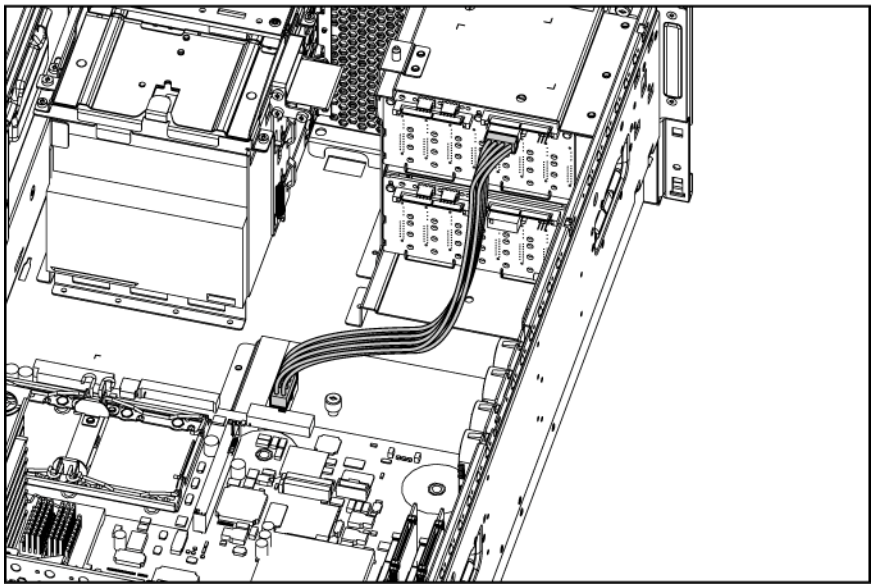
SAS cabling

NOTE: The center wall is removed for illustration purposes only.

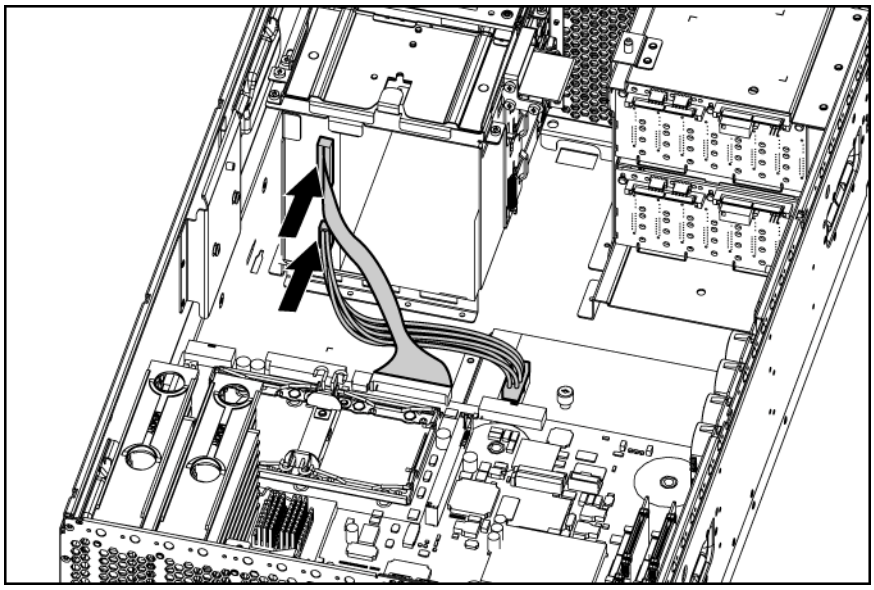
- SAS data cabling



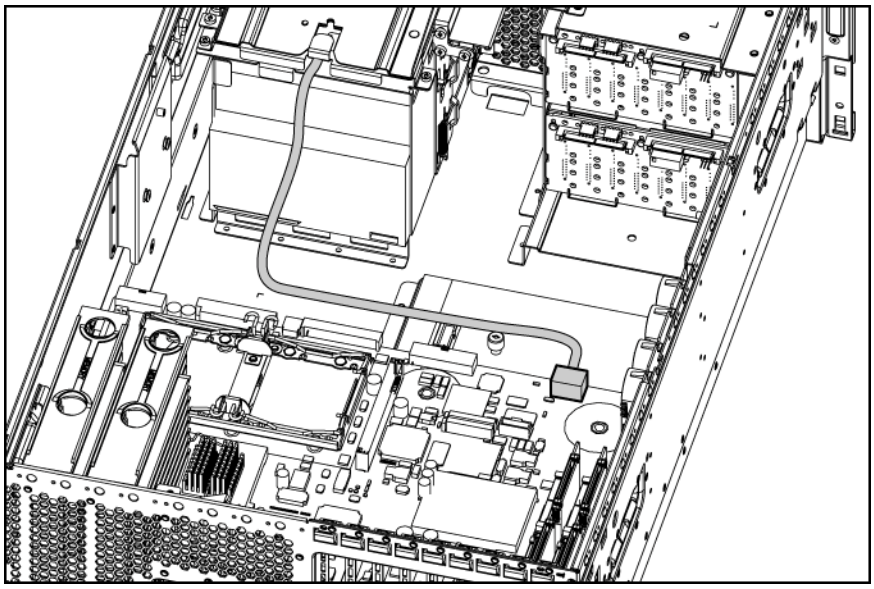
- SAS power cabling



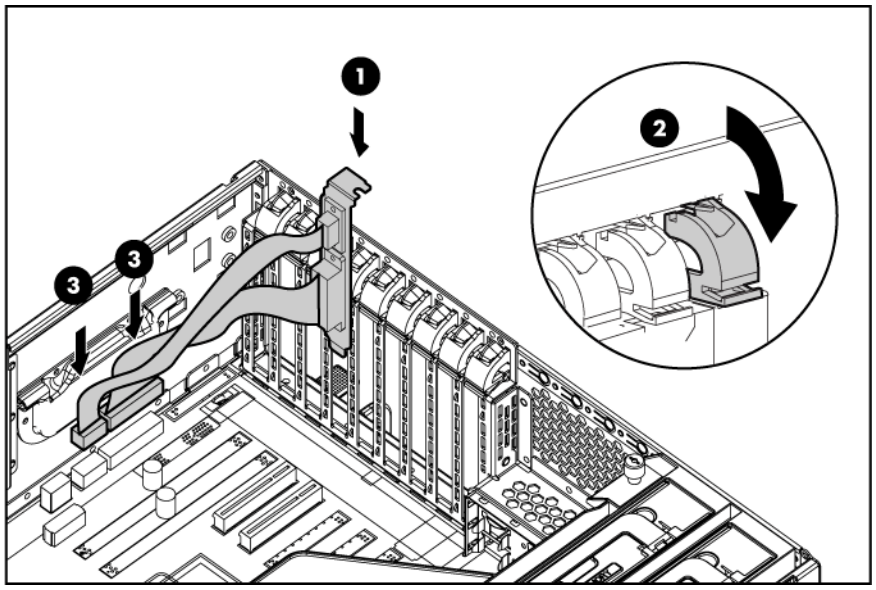
CD-ROM drive cabling



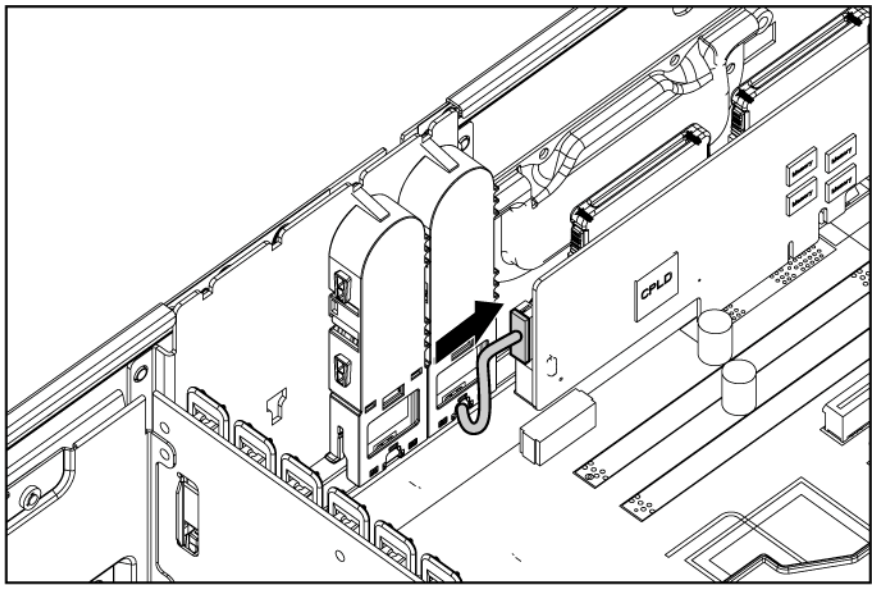
Video cabling



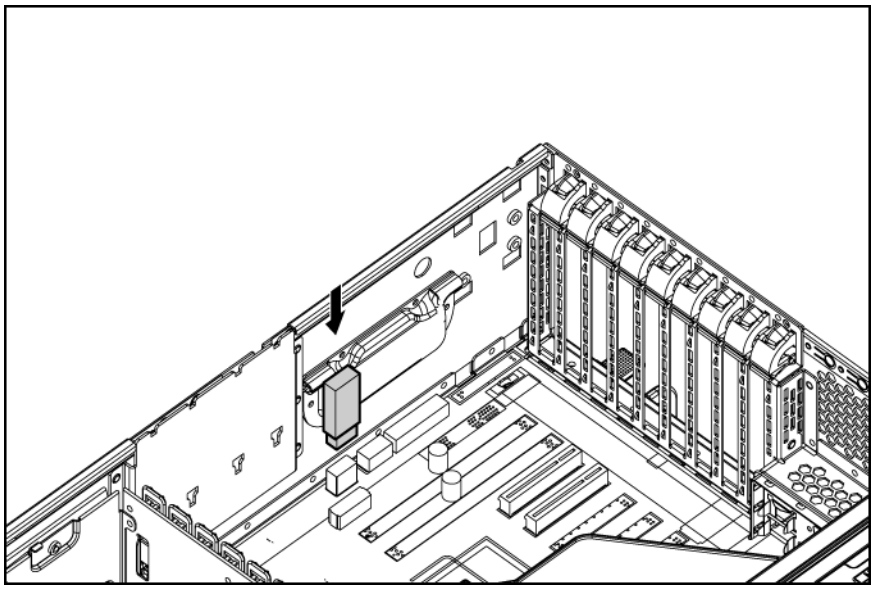
Parallel/serial port cabling



BBWC option cabling



Internal USB connector

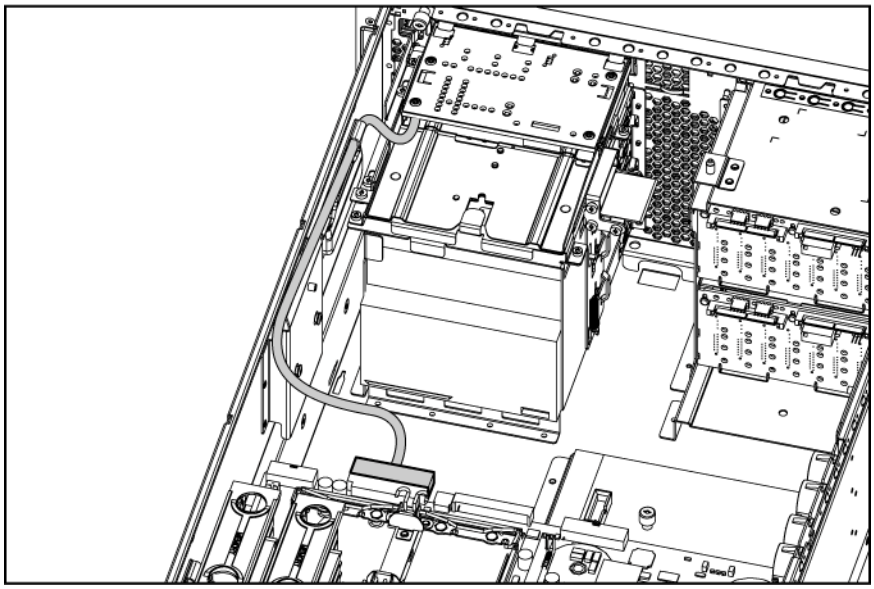


Storage device cabling guidelines

△ **CAUTION:** To prevent damage to the equipment, be sure that the server is powered down, all cables are disconnected from the back of the server, and the power cord is disconnected from the grounded (earthed) AC outlet before installing devices.

△ **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

HP Systems Insight Display cabling



Diagnostic tools

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Integrated Lights-Out 2 technology 72
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ProLiant Essentials Rapid Deployment Pack 72
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System Online ROM flash component utility 73
SmartStart software 73

Automatic Server Recovery

ASR is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue screen, ABEND, or panic. A system fail-safe timer, the ASR timer, starts when the System Management driver, also known as the Health Driver, is loaded. When the operating system is functioning properly, the system periodically resets the timer. However, when the operating system fails, the timer expires and restarts the server.

ASR increases server availability by restarting the server within a specified time after a system hang or shutdown. At the same time, the HP SIM console notifies you by sending a message to a designated pager number that ASR has restarted the system. You can disable ASR from the HP SIM console or through RBSU.

HP Systems Insight Manager

HP SIM is a web-based application that allows system administrators to accomplish normal administrative tasks from any remote location, using a web browser. HP SIM provides device management capabilities that consolidate and integrate management data from HP and third-party devices.

IMPORTANT: You must install and use HP SIM to benefit from the Pre-Failure Warranty for processors, SAS and SCSI hard drives, and memory modules.

For additional information, refer to the Management CD in the HP ProLiant Essentials Foundation Pack or the HP SIM website (http://www.hp.com/go/hpsim).

Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML timestamps each event with 1-minute granularity.

You can view recorded events in the IML in several ways, including the following:

- From within HP SIM ("HP Systems Insight Manager" on page 71)

- From within Survey Utility
- From within operating system-specific IML viewers
  - For NetWare: IML Viewer
  - For Windows®: IML Viewer
  - For Linux: IML Viewer Application
- From within the iLO 2 user interface
- From within HP Insight Diagnostics (on page 74)

For more information, refer to the Management CD in the HP ProLiant Essentials Foundation Pack.

Integrated Lights-Out 2 technology

The iLO 2 subsystem is a standard component of selected ProLiant servers that provides server health and remote server manageability. The iLO 2 subsystem includes an intelligent microprocessor, secure memory, and a dedicated network interface. This design makes iLO 2 independent of the host server and its operating system. The iLO 2 subsystem provides remote access to any authorized network client, sends alerts, and provides other server management functions.

Using iLO 2, you can:

- Remotely power up, power down, or reboot the host server.
- Send alerts from iLO 2 regardless of the state of the host server.
- Access advanced troubleshooting features through the iLO 2 interface.
- Diagnose iLO 2 using HP SIM through a web browser and SNMP alerting.

For more information about iLO 2 features, refer to the iLO 2 documentation on the Documentation CD or on the HP website (http://www.hp.com/servers/lights-out).

Option ROM Configuration for Arrays

NOTE: ORCA is supported with the use of an optional HP Array Controller.

Before installing an operating system, you can use the ORCA utility to create the first logical drive, assign RAID levels, and establish online spare configurations.

The utility provides support for the following functions:

- Configuring one or more logical drives using physical drives on one or more SCSI buses
- Viewing the current logical drive configuration
- Deleting a logical drive configuration

If you do not use the utility, ORCA will default to the standard configuration.

For more information regarding array controller configuration, refer to the controller user guide.

For more information regarding the default configurations that ORCA uses, refer to the *HP ROM-Based Setup Utility User Guide* on the Documentation CD.

ProLiant Essentials Rapid Deployment Pack

The RDP is an integrated HP and Altiris solution that automates the process of deploying and provisioning server software. Refer to the RDP website (http://www.hp.com/servers/rdp).

HP ROM-Based Setup Utility

RBSU, an embedded configuration utility, performs a wide range of configuration activities that may include:

- Configuring system devices and installed options
- Displaying system information
- Selecting the primary boot controller
- Configuring memory options
- Language selection

For more information on RBSU, refer to the *HP ROM-Based Setup Utility User Guide* on the Documentation CD or the HP website (http://www.hp.com/servers/smartstart).

ROMPaq utility

Flash ROM enables you to upgrade the firmware (BIOS) with system or option ROMPaq utilities. To upgrade the BIOS, insert a ROMPaq diskette into the diskette drive and boot the system.

The ROMPaq utility checks the system and provides a choice (if more than one exists) of available ROM revisions. This procedure is the same for both system and option ROMPaq utilities.

For more information about the ROMPaq utility, refer to the HP website (http://www.hp.com/servers/manage).

System Online ROM flash component utility

The Online ROM Flash Component Utility enables system administrators to efficiently upgrade system or controller ROM images across a wide range of servers and array controllers. This tool has the following features:

- Works offline and online
- Supports Microsoft® Windows NT®, Windows® 2000, Windows Server™ 2003, Novell Netware, and Linux operating systems

IMPORTANT: This utility supports operating systems that may not be supported by the server. For operating systems supported by the server, refer to the HP website (http://www.hp.com/go/supportos).

- Integrates with other software maintenance, deployment, and operating system tools
- Automatically checks for hardware, firmware, and operating system dependencies, and installs only the correct ROM upgrades required by each target server

To download the tool and for more information, refer to the HP website (http://h18000.www1.hp.com/support/files/index.html).

SmartStart software

SmartStart is a collection of software that optimizes single-server setup, providing a simple and consistent way to deploy server configuration. SmartStart has been tested on many ProLiant server products, resulting in proven, reliable configurations.

SmartStart assists the deployment process by performing a wide range of configuration activities, including:

- Configuring hardware using embedded configuration utilities, such as RBSU and ORCA

- Preparing the system for installing "off-the-shelf" versions of leading operating system software
- Installing optimized server drivers, management agents, and utilities automatically with every assisted installation
- Testing server hardware using the Insight Diagnostics Utility ("HP Insight Diagnostics" on page 74)
- Installing software drivers directly from the CD. With systems that have internet connection, the SmartStart Autorun Menu provides access to a complete list of ProLiant system software.
- Enabling access to the Array Configuration Utility, Array Diagnostic Utility, and Erase Utility

SmartStart is included in the HP ProLiant Essentials Foundation Pack. For more information about SmartStart software, refer to the HP ProLiant Essentials Foundation Pack or the HP website (http://www.hp.com/servers/smartstart).

SmartStart Scripting Toolkit

The SmartStart Scripting Toolkit is a server deployment product that delivers an unattended automated installation for high-volume server deployments. The SmartStart Scripting Toolkit is designed to support ProLiant BL, ML, and DL servers. The toolkit includes a modular set of utilities and important documentation that describes how to apply these new tools to build an automated server deployment process.

Using SmartStart technology, the Scripting Toolkit provides a flexible way to create standard server configuration scripts. These scripts are used to automate many of the manual steps in the server configuration process. This automated server configuration process cuts time from each server deployed, making it possible to scale server deployments to high volumes in a rapid manner.

For more information, and to download the SmartStart Scripting Toolkit, refer to the HP website (http://www.hp.com/servers/sstoolkit).

HP Insight Diagnostics

HP Insight Diagnostics is a proactive server management tool, available in both offline and online versions, that provides diagnostics and troubleshooting capabilities to assist IT administrators who verify server installations, troubleshoot problems, and perform repair validation.

HP Insight Diagnostics Offline Edition performs various in-depth system and component testing while the OS is not running. To run this utility, launch the SmartStart CD.

HP Insight Diagnostics Online Edition is a web-based application that captures system configuration and other related data needed for effective server management. Available in Microsoft® Windows® and Linux versions, the utility helps to ensure proper system operation.

For more information or to download the utility, refer to the HP website (http://www.hp.com/servers/diags).

Component identification

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Fan locations 85
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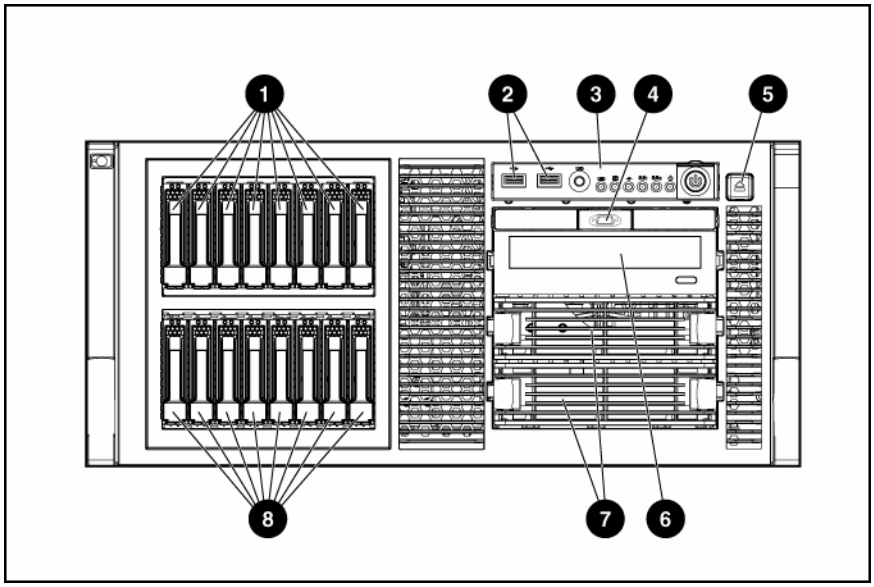
Front panel components

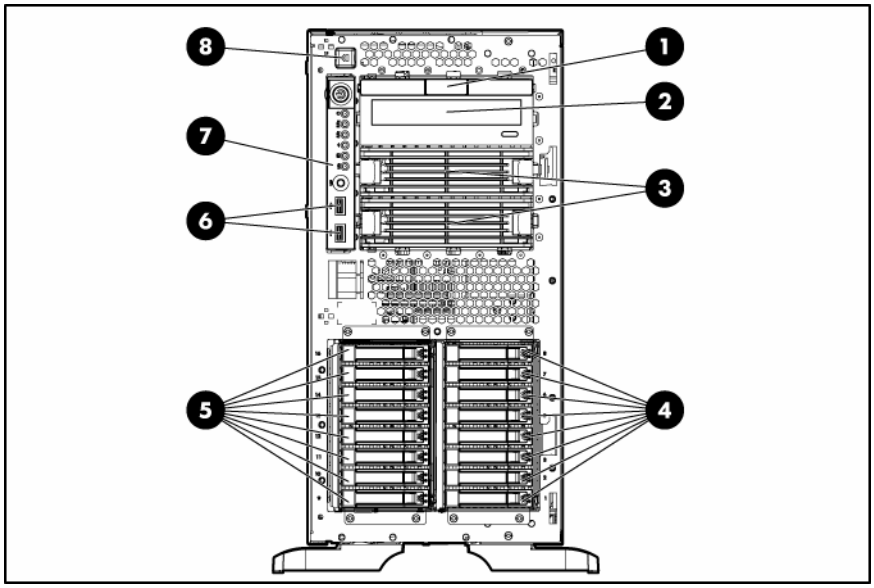
- Rack model



Item	Description
1	Hard drive bays 9-16 (optional drive cage)
2	USB connectors
3	HP Systems Insight Display
4	Video connector (rack model only)
5	HP Systems Insight Display ejector button

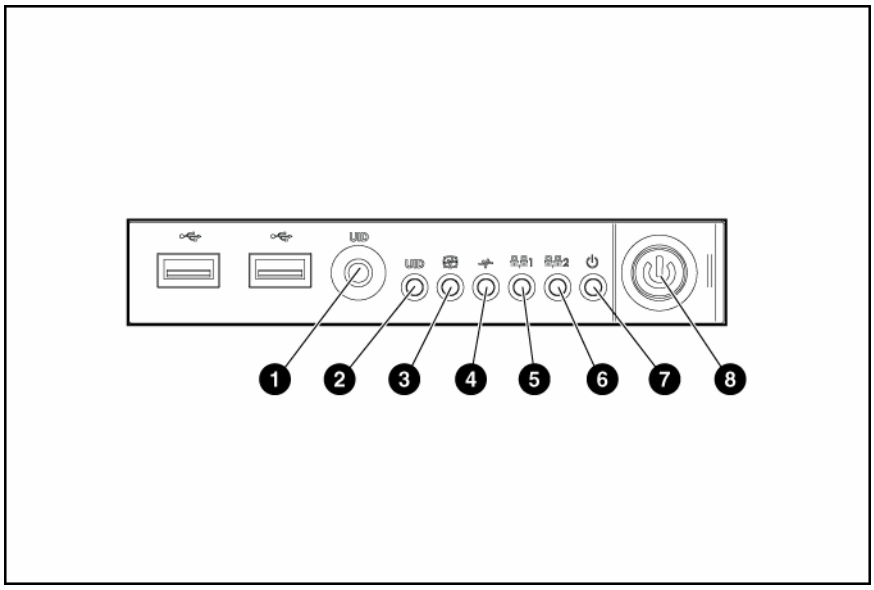
Item	Description
6	DVD/CD-ROM drive
7	Removable media bays
8	Hard drive bays 1-8

- Tower model



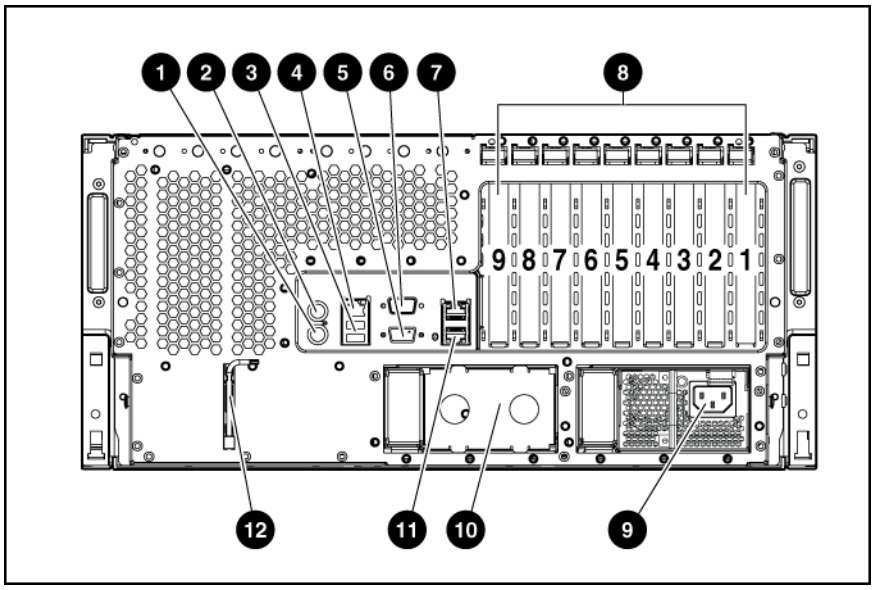
Item	Description
1	Media bay spacer
2	DVD/CD-ROM drive
3	Removable media bays
4	Hard drive bays 1-8
5	Hard drive bays 9-16 (optional drive cage)
6	USB connectors
7	HP Systems Insight Display
8	HP Systems Insight Display ejector button

Front panel LEDs and buttons



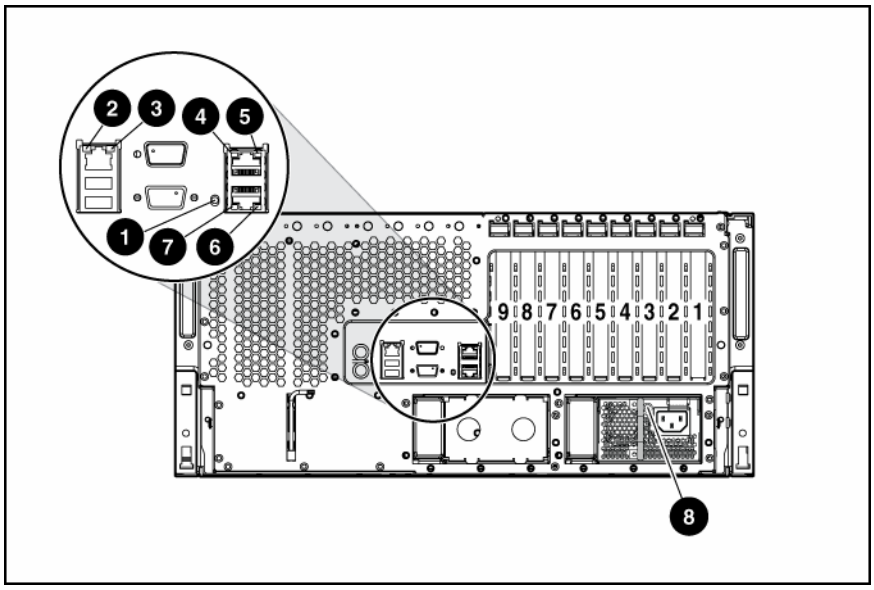
Item	Description	Status
1	UID button	—
2	UID LED	Blue = Activated Flashing blue = System is being managed remotely Off = Deactivated
3	Internal system health LED	Green = Normal (system on) Amber = System health is degraded Red = System health is critical Off = Normal (system off)
4	External system health LED (power supply)	Green = Normal (system on) Amber = Redundant power supply failure Red = Power supply failure. No operational power supplies. Off = Normal (system off)
5	NIC 1 link/activity LED (embedded NIC)	Green = Linked to network Flashing green = Linked with activity on the network Off = No network connection
6	NIC 2 link/activity LED (embedded NIC)	Green = Linked to network Flashing green = Linked with activity on the network Off = No network connection
7	System power LED	Green = System has AC power and is powered up Amber = System has AC power and is in standby mode Off = System has no AC power
8	Power On/Standby button	—

Rear panel components



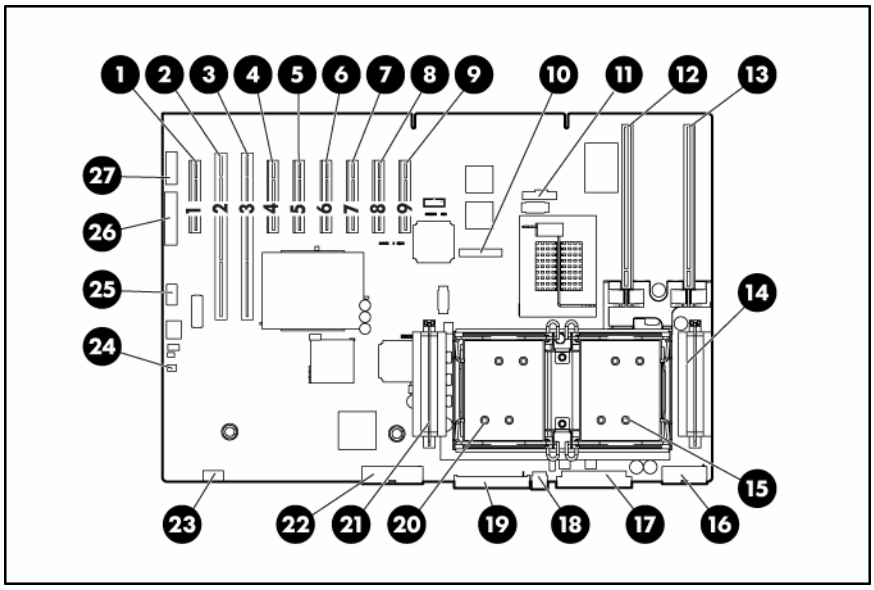
Item	Description
1	Keyboard connector
2	Mouse connector
3	USB connectors
4	iLO 2 management connector
5	Video connector
6	Serial connector
7	NIC 2 connector
8	PCI expansion slots
9	Hot-plug power supply (primary bay)
10	Hot-plug power supply blank (redundant bay)
11	NIC 1 connector
12	T-10/T-15 Torx screwdriver

Rear panel LEDs



Item	Description	Status
1	UID LED	Blue = Activated Flashing blue = system is being remotely managed Off = Deactivated
2	iLO 2 activity LED	Green or flashing green = Network activity Off = No network activity
3	iLO 2 link LED	Green = Linked to network Off = No network connection
4	NIC 2 activity LED	Green or flashing green = Network activity Off = No network activity
5	NIC 2 link LED	Green = Linked to network Off = No network connection
6	NIC 1 link LED	Green = Linked to network Off = No network connection
7	NIC 1 activity LED	Green or flashing green = Network activity Off = No network activity
8	Power supply LED	Green = System has AC power and is powered up Off = System has no AC power

System board components



Item	Description
1	PCI Express slot 1, x4
2	PCI-X slot 2, 64-bit/133-MHz
3	PCI-X slot 3, 64-bit/133-MHz
4	PCI Express slot 4, x4
5	PCI Express slot 5, x4 (optional x8 when PCIe Bus Expander is installed in slot 4)
6	PCI Express slot 6, x4
7	PCI Express slot 7, x4 (optional x8 when PCIe Bus Expander is installed in slot 6)
8	PCI Express slot 8, x4
9	PCI Express slot 9, x4 (optional x8 when PCIe Bus Expander is installed in slot 8)
10	System maintenance switch (SW1)
11	System battery
12	Memory board connector 1
13	Memory board connector 2
14	PPM 1
15	Processor 1
16	Power connector
17	Fan control/HP Systems Insight Display connector
18	USB tape drive connector
19	IDE connector
20	Processor 2
21	PPM 2
22	Power connector
23	Front video connector

Item	Description
24	Internal USB connector
25	Serial 2 connector
26	Parallel connector
27	Diskette drive connector

System maintenance switch

Position	Default	Function
S1	Off	Off = iLO 2 security is enabled. On = iLO 2 security is disabled.
S2	Off	Off = System configuration can be modified. On = System configuration is locked and cannot be modified.
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled. On = Power-on password is disabled.
S6	Off	Off = Normal On = ROM treats system configuration as invalid.
S7	Off	Reserved
S8	Off	Reserved

When the system maintenance switch position 6 is set to the On position, the system is prepared to erase all system configuration settings from both CMOS and NVRAM.

△ **CAUTION:** Clearing CMOS and/or NVRAM deletes configuration information. Be sure to properly configure the server or data loss could occur.

Internal system health LED combinations

When the internal system health LED on the front panel ("Front panel LEDs and buttons" on page 77) illuminates either amber or red, the server is experiencing a health event. Combinations of illuminated HP Systems Insight Display LEDs and the internal health LED indicate system status.

NOTE: The system management driver must be installed for the internal system health LED to provide pre-failure and warranty conditions.

The front panel health LEDs indicate only the current hardware status. In some situations, HP SIM may report server status differently than the health LEDs because the software tracks more system attributes.

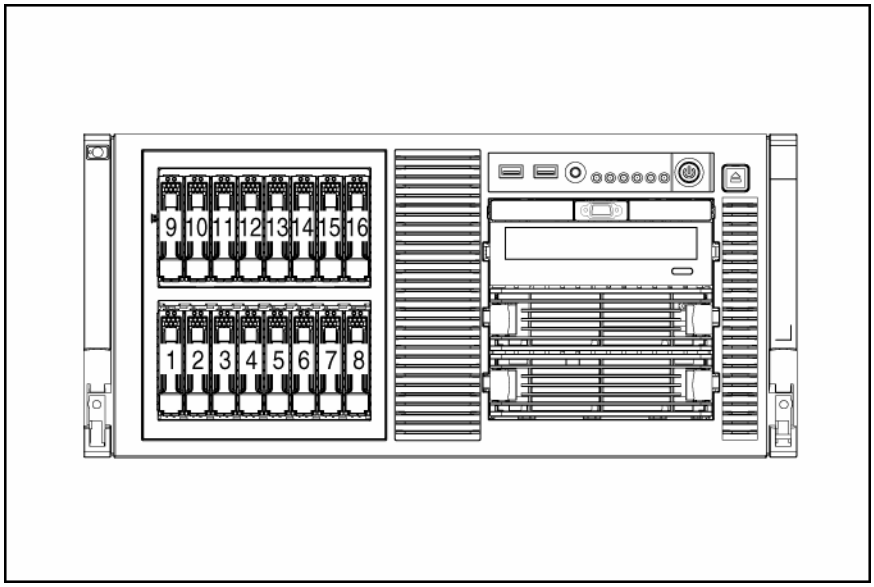
HP Systems Insight Display LED color	Internal system health LED color	Status
Processor failure, socket *X* (amber)	Red	One or more of the following conditions may exist: • Processor in socket *X* has failed. • Processor *X* is not installed in the socket. • ROM detected a failed processor during POST.
	Amber	Processor in socket *X* is in a pre-failure condition.

HP Systems Insight Display LED color	Internal system health LED color	Status
PPM failure, slot *X* (amber)	Red	One or more of the following conditions may exist: • PPM in slot *X* has failed. • PPM is not installed in slot *X*, but the corresponding processor is installed.
DIMM failure, slot *X* (amber)	Red	One or more of the following conditions may exist: • DIMM in slot *X* has failed. • DIMM has experienced a multi-bit error.
	Amber	One or more of the following conditions may exist: • DIMM in slot *X* has reached single-bit correctable error threshold. • DIMM in slot *X* is in a pre-failure condition.
DIMM bank error (all slots in one bank, amber)	Red	One or more of the following conditions may exist: • The bank is not populated entirely. • All DIMMs in the bank do not match. • Memory riser board is missing or not fully seated.
DIMM failure (all slots, amber)	Red	One or more of the following conditions may exist: • No valid or usable memory is installed in the system. • The banks are not populated in the correct order.
Overtemperature alert (amber)	Red	System temperature has exceeded OS cautionary level or critical hardware level.
Fan (amber)	Red	A required fan has failed.
	Amber	A redundant fan has failed.

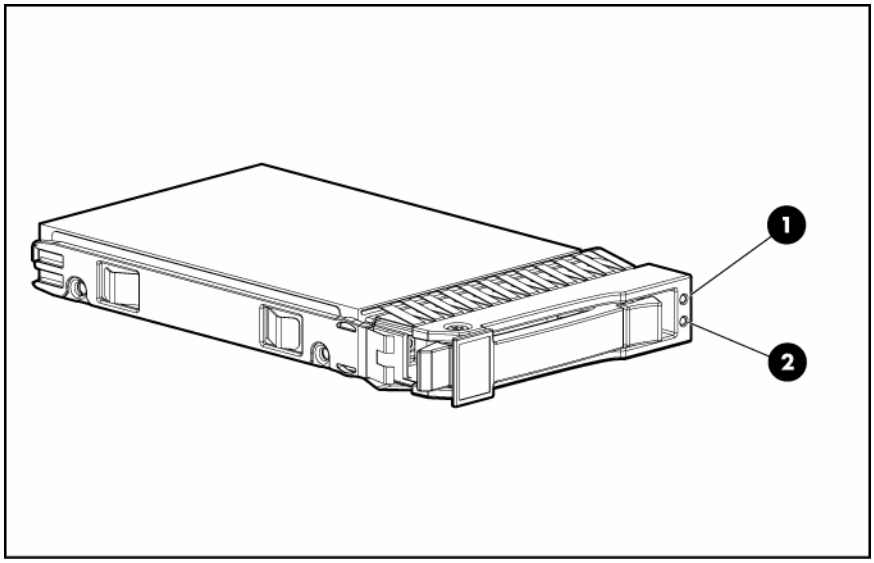
SAS and SATA device numbers

The server supports a combination of up to 16 SAS and SATA hard drives in two hard drive cages.

HP recommends populating hard drive bays starting with the lowest SAS or SATA device number.



SAS and SATA hard drive LEDs



Item	Description	Status
1	Fault/UID LED	Amber = Drive failure Flashing amber = Fault-process activity Blue = Unit identification is active Off = No fault-process activity
2	Online/activity LED	Green = Drive activity Flashing green = High activity on the drive or drive is being configured as part of an array Off = No drive activity

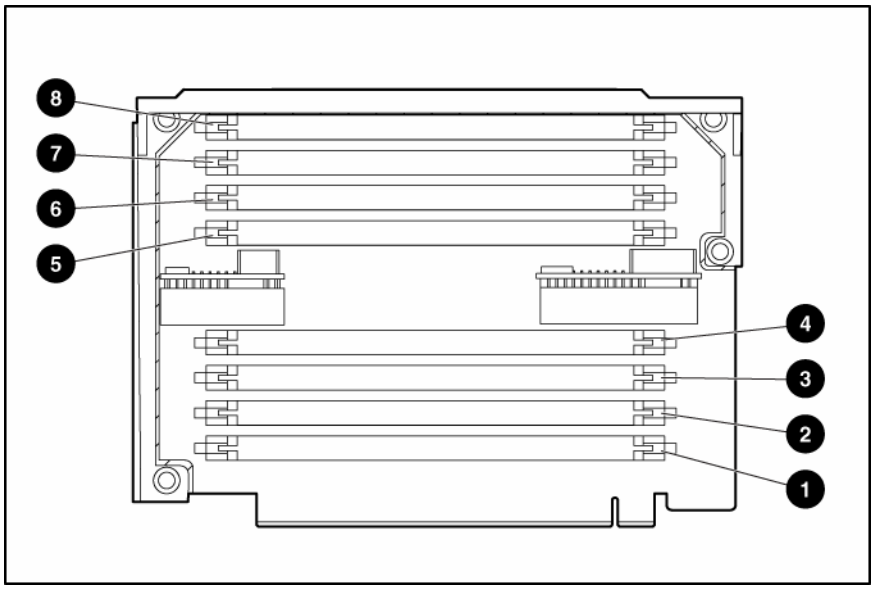
SAS and SATA hard drive LED combinations

Online/activity LED (green)	Fault/UID LED (amber/blue)	Interpretation
On, off, or flashing	Alternating amber and blue	The drive has failed, or a predictive failure alert has been received for this drive; it also has been selected by a management application.
On, off, or flashing	Steadily blue	The drive is operating normally, and it has been selected by a management application.
On	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
On	Off	The drive is online, but it is not active currently.
Flashing regularly (1 Hz)	Amber, flashing regularly (1 Hz)	**Do not remove the drive. Removing a drive may terminate the current operation and cause data loss.** The drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive. To minimize the risk of data loss, do not replace the drive until the expansion or migration is complete.

Online/activity LED (green)	Fault/UID LED (amber/blue)	Interpretation
Flashing regularly (1 Hz)	Off	**Do not remove the drive. Removing a drive may terminate the current operation and cause data loss.** The drive is rebuilding, or it is part of an array that is undergoing capacity expansion or stripe migration.
Flashing irregularly	Amber, flashing regularly (1 Hz)	The drive is active, but a predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Flashing irregularly	Off	The drive is active, and it is operating normally.
Off	Steadily amber	A critical fault condition has been identified for this drive, and the controller has placed it offline. Replace the drive as soon as possible.
Off	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Off	Off	The drive is offline, a spare, or not configured as part of an array.

FBDIMM slots

The server supports two memory boards, each containing eight slots with paired banks identified by the letters A through D.

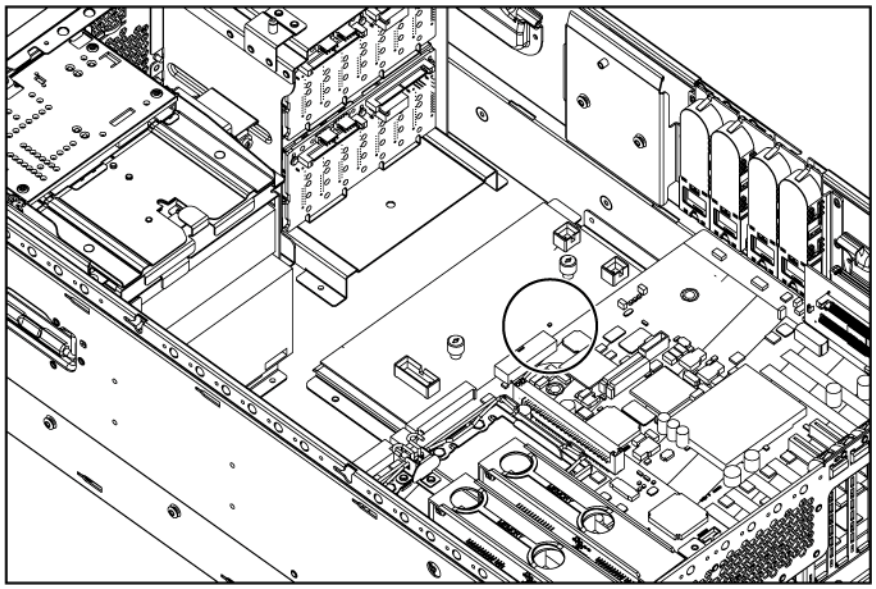


Item	Description
1	FBDIMM slot 1, bank A
2	FBDIMM slot 2, bank B
3	FBDIMM slot 3, bank C
4	FBDIMM slot 4, bank D
5	FBDIMM slot 5, bank A
6	FBDIMM slot 6, bank B
7	FBDIMM slot 7, bank C

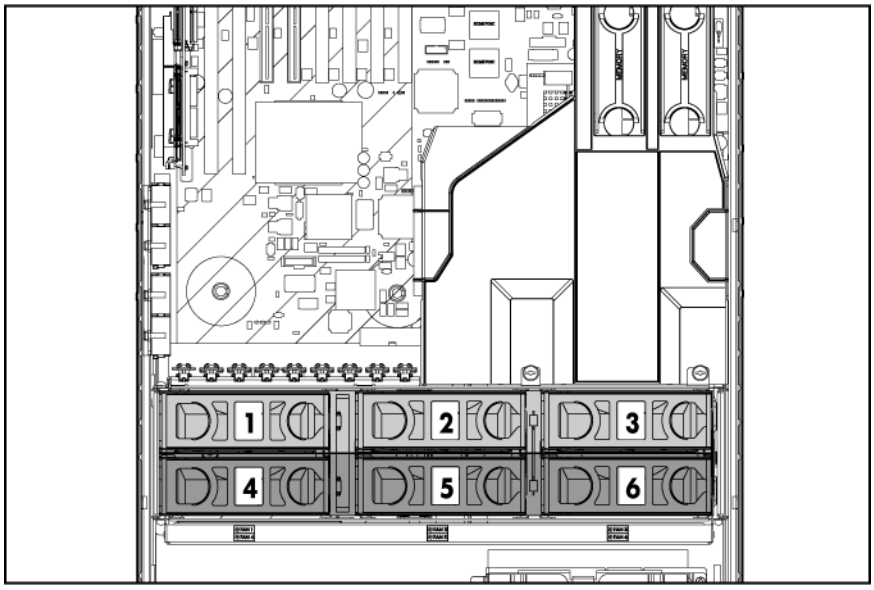
Item	Description
8	FBDIMM slot 8, bank D

Power supply backplane LED

If the power supply backplane LED is illuminated, the power supply backplane has failed.



Fan locations

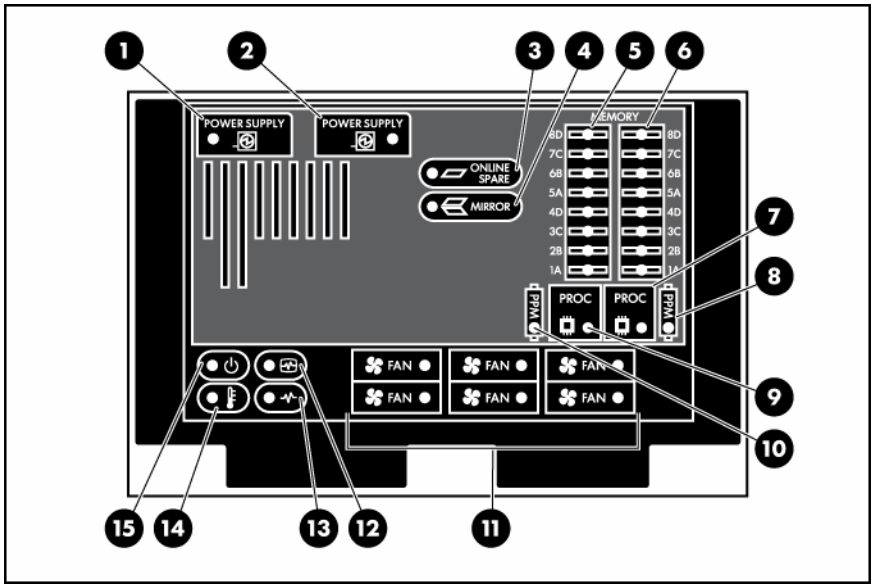


Item	Description	Configuration
1	Fan 1	Primary
2	Fan 2	Primary
3	Fan 3	Primary
4	Fan 4	Redundant

Item	Description	Configuration
5	Fan 5	Redundant
6	Fan 6	Redundant

Systems Insight Display LEDs

To view a quick reference for component identification and status, access the Systems Insight Display.



Item	Description	Status
1	Primary power supply LED	Amber = Failure Off = Normal
2	Redundant power supply LED	Amber = Failure Off = Normal
3	Online spare memory LED	Green = Protection enabled Amber = Memory failure occurred Flashing amber = Memory configuration error Off = No protection
4	Mirrored memory LED	Green = Protection enabled Amber = Memory failure occurred Flashing amber = Memory configuration error Off = No protection
5	FBDIMM LEDs* (memory board 1)	Amber = Failure Off = Normal
6	FBDIMM LEDs* (memory board 2)	Amber = Failure Off = Normal
7	Processor 1 LED	Amber = Failure Off = Normal
8	PPM 1 LED	Amber = Failure Off = Normal

Item	Description	Status
9	Processor 2 LED	Amber = Failure Off = Normal
10	PPM 2 LED	Amber = Failure Off = Normal
11	Hot-plug fan LEDs	Amber = Failure or fan is not installed Off = Normal
12	Internal system health LED	Green = Normal (system on) Amber = System health is degraded Red = System health is critical Off = Normal (system off)
13	External system health LED (power supply)	Green = Normal (system on) Amber = Redundant power supply failure Red = Power supply failure. No operational power supplies. Off = Normal (system off)
14	Overtemperature LED	Red = Overheating, critical Off = Normal
15	System power LED	Green = System has AC power and is powered on Amber = System has AC power and is in standby mode Off = System has no AC power

* If all FBDIMM LEDs for a memory board are flashing, the memory board is unseated.

Specifications

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Environmental specifications

Specification	Value
Temperature range*	
Operating	10°C to 35°C (50°F to 95°F)
Shipping	-40°C to 70°C (-40°F to 158°F)
Maximum wet bulb temperature	28°C (82.4°F)
Relative humidity (noncondensing)**	
Operating	10% to 90%
Non-operating	5% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed.
** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.

Server specifications

Specification	Value
Dimensions	
Rack model	—
Height	21.92 cm (8.63 in)
Depth	65.41 cm (26.5 in)
Width	44.45 cm (17.50 in)
Tower model	—
Height	47 cm (18.5 in)
Depth	71.1 cm (28 in)
Width	21.92 cm (8.63 in)
Weight	

Specification	Value
Weight (maximum)	40.8 kg (110 lb)
Weight (when lightly loaded)	24.9 kg (55 lb)
Input requirements	
Rated input voltage	100 VAC to 240 VAC *
Rated input frequency	47 Hz to 63 Hz
Rated input current	10 A (100 V) to 6.7 A (200 V)
Rated input power	1500 W
BTUs per hour	2730
Power supply output	
Rated steady-state power	800 W (low line), 1000 W (high line)
Maximum peak power	1000 W (low line), 1200 W (high line)

* 100 to 127 VAC is required for 10 A; 200 to 240 VAC is required for 6.7 A.

Hot-plug power supply calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the server, refer to the HP Enterprise Configurator website (http://h30099.www3.hp.com/configurator/).

FBDIMM specifications

△ **CAUTION:** Be sure to install FBDIMMs in the proper configuration. Refer to the Documentation CD.

Specification	Value
Type	FBDIMM, PC2-5300F, Fully-Buffered DIMMs
Size	512-MB, 1-GB, 2-GB, 4-GB, 8-GB
Width	72 bits
Upgrade requirement *	FBDIMMs must be installed in pairs within a bank. A bank must be populated with two FBDIMMs with identical HP part numbers.

*Use only Registered DDR2 FBDIMMs. Use HP FBDIMMs only.

1.44-MB diskette drive specifications

Specification	Value
Dimensions	
Height	12.7 mm (0.5 in)
Width	96 mm (3.8 in)
Depth	130 mm (5.1 in)
LEDs (front panel)	Green = Active
Read/write capacity per diskette	
High density	1.44 MB
Low density	720 KB

Specification	Value
Drives supported	1
Drive height	One-third height
Drive rotation	300 rpm
Transfer rate	
High	500 Kb/s
Low	250 Kb/s
Bytes/sector	512
Sectors per track (high/low)	18/9
Tracks per side (high/low)	80/80
Access times	
Track-to-track (high/low)	3 ms/6 ms
Average (high/low)	169 ms/94 ms
Setting time	15 ms
Latency average	100 ms
Cylinders (high/low)	80/80
Read/write heads	2

CD-ROM drive specifications

Specification	Value
Disk formats	CD-ROM (modes 1 and 2); mixed mode (audio and data combined); CD-DA; Photo CD (single/multiple-session), CD-XA ready; CDi ready
Capacity	550 MB (mode 1, 12 cm)
	640 MB (mode 2, 12 cm)
Block size	2368, 2352 bytes (mode 0)
	2352, 2340, 2336, 2048 bytes (mode 1)
	2352, 2340, 2336, 2048 bytes (mode 2)
Dimensions	
Height	12.7 mm (0.50 in)
Depth	132.08 mm (5.20 in)
Width	132.08 mm (5.20 in)
Weight	0.34 kg (0.75 lb)
Data transfer rate	
Sustained	150 KB/s (sustained 1X), 1500/3600 KB/s (10X to 24X)
Burst	16.6 MB/s
Access times (typical)	
Full stroke	300 ms
Random	140 ms
Diameter	12 cm, 8 cm (4.70 in, 3.15 in)
Thickness	1.2 mm (0.05 in)

Specification	Value
Track pitch	1.6 µm (6.3×10^{-7} in)
Cache/buffer	128 KB
Startup time	< 10 s
Stop time	< 5 s (single); < 30 s (multisession)
Laser parameters	
Type	Semiconductor laser GaAs
Wave length	700 ± 25 nm
Divergence angle	53.5° ± 1.5°
Output power	0.14 mW
Operating conditions	
Temperature	5°C to 55°C (41°F to 131°F)
Humidity	10% to 80%

SAS and SATA hard drive specifications

Item	36-GB SAS drive	72-GB SAS drive	60-GB SATA drive
Capacity	36,420 MB	73,408 MB	60,022 MB
Height	15 mm	15 mm	9 mm
Interface	SAS	SAS	Serial ATA
Transfer rate	3 GB/sec	3 GB/sec	1.5 GB/sec
Rotational speed	10,000 rpm	10,000 rpm	5,400 rpm
Bytes per sector	512	512	512
Logical blocks	71,132,960	143,374,737	117,231,408
Operating temperature	10°C to 35°C (50°F to 95°F)	10°C to 35°C (50°F to 95°F)	10°C to 35°C (50°F to 95°F)

Acronyms and abbreviations

ABEND

abnormal end

ASR

Automatic Server Recovery

BBWC

battery-backed write cache

BIOS

Basic Input/Output System

DDR

double data rate

DIMM

dual inline memory module

FBDIMM

fully buffered DIMM

IDE

integrated device electronics

iLO 2

Integrated Lights-Out 2

IML

Integrated Management Log

LED

light-emitting diode

NIC

network interface controller

NMI

non-maskable interrupt

NVRAM

non-volatile memory

ORCA

Option ROM Configuration for Arrays

PCI Express

peripheral component interconnect express

PCI-X

peripheral component interconnect extended

POST

Power-On Self Test

PPM

processor power module

RAID

redundant array of inexpensive (or independent) disks

RBSU

ROM-Based Setup Utility

RDP

Remote Desktop Protocol

ROM

read-only memory

SAS

serial attached SCSI

SATA

serial ATA

SCSI

small computer system interface

SIM

Systems Insight Manager

SNMP

Simple Network Management Protocol

UID

unit identification

USB

universal serial bus

VHDCI

very high density cable interconnect

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